BLM

Battle Mountain District Office

U.S. Department of the Interior
Bureau of Land Management

Final Environmental Assessment
DOI-BLM-NV-B000-2014-0001-EA
DATE: April 2014

July 2014 Competitive Oil and Gas Lease Sale, Battle Mountain District, Nevada
ENVIRONMENTAL ASSESSMENT

Amended August 14, 2014

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Table of Contents

1.0 INTRODUCTION

1.1 Background

It is the policy of the Bureau of Land Management (BLM) as mandated by various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976, to make mineral resources available and to encourage development of mineral resources to meet national, regional and local needs.

The BLM-Nevada State Office (NVSO) conducts competitive sales for oil and gas lease parcels in the Battle Mountain District. The NVSO publishes a Notice of Competitive Lease Sale (NCLS) that lists lease parcels offered at the auction at least 90 days before it is held. The BLM bases its decision as to which parcels to offer for a competitive lease sale on current resource and land use information and the management framework developed in the appropriate district or field office Resource Management Plans (RMPs).

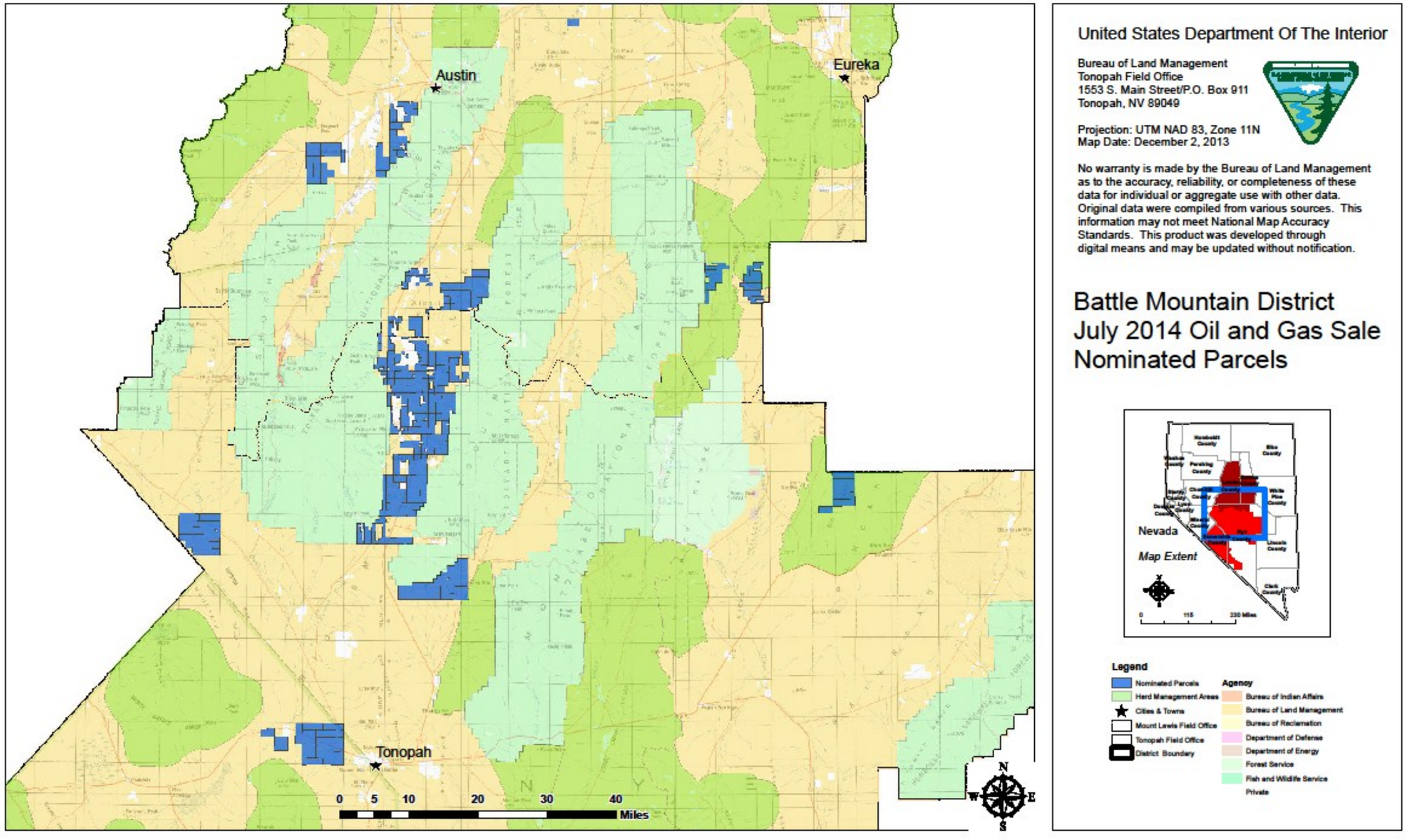
In the process of preparing a lease sale, the NVSO sends a list of nominated parcels to each field office where the parcels are located. Through an Environmental Assessment (EA), the field office staff then reviews the parcels to determine:

- If they are in areas open to leasing;
- If new information has become available which might change any analysis conducted during the planning process;
- If appropriate consultations have been conducted;
- What appropriate stipulations should be included; and
- If there are special resource conditions of which potential bidders should be made aware.

Based on the EA, the Nevada BLM State Director will decide which parcels to make available for leasing and which stipulations to attach to the parcels. Those parcels and stipulations that are included in the State Director's decision will then be made available to the public through a NCLS. Lease stipulations applicable to each parcel are specified in the Sale Notice. On rare occasions, additional information obtained after the publication of the NCLS, may result in withdrawal of certain parcels prior to the day of the lease sale.

This EA documents the review of 166 Battle Mountain District Office (BMDO) administered parcels nominated in the July 2014 Competitive Oil and Gas Lease Sale (Figure 1). The EA verifies conformance with the approved Land Use Plan, provides the rationale for any lease stipulations applied to specific parcels and identifies parcels for deferral.

An assessment of potential environmental impacts, based on a Reasonably Foreseeable Development (RFD) scenario, was conducted by resource specialists who relied on historical data and personal knowledge of the areas involved, conducted field inspections and/or reviewed existing databases and file information to determine the appropriate stipulations to attach to specific parcels.



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Projection: UTM NAD 83, Zone 11N
Map Date: December 2, 2013

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Battle Mountain District July 2014 Oil and Gas Sale Nominated Parcels

Legend

- Nominated Parcels
- Herd Management Areas
- Cities & Towns
- Mount Lewis Field Office
- Tonopah Field Office
- District Boundary

Agency

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Forest Service
- Fish and Wildlife Service
- Private

Figure 1 - Oil and Gas Lease Parcels Nominated for July 2014 Lease Sale

DOI-BLM-NV-B000-2014-0001-EA

At the time of this review, it is not known whether the nominated parcels will receive bids, if leases will be issued, or what types of lease operations might be proposed in the future. Detailed site-specific NEPA analysis would occur when an Application for Permit to Drill (APD) is submitted.

1.2 Purpose and Need for Action

Oil and gas leasing is necessary to provide oil and gas companies with new areas to explore and potentially develop. Leasing is authorized under the Mineral Leasing Act of 1920, as amended and modified by subsequent legislation, and regulations found at 43 CFR part 3100. Oil and gas leasing is recognized as an acceptable use of the public lands under the Federal Land Policy and Management Act of 1976 (FLPMA). BLM authority for leasing public mineral estate for the development of energy resources, including oil and gas, is listed in 43 CFR 3160.0-3.

Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and consideration for the natural and cultural resources that may be present. This requires that adequate provisions are included with the leases to protect public health and safety and assure full compliance with the spirit and objectives of the National Environmental Policy Act (NEPA) and other federal environmental laws and regulations.

The BLM is required by law to consider leasing of areas that have been nominated for lease if leasing is in conformance with the BLM land use plan. The oil and gas parcels addressed in this EA cannot be considered for leasing without supplemental analysis of changes in environmental conditions that have occurred since the completion of the current Land Use Plan (LUP) (e.g., increased growth, locations of special status species, identification of traditional cultural properties).

1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the Tonopah RMP, approved on October 6, 1997, for the Tonopah Planning Area and the Shoshone Eureka RMP and associated Record of Decision (1986). The Proposed Action is in conformance with the Tonopah RMP because it is specifically provided for in the following LUP objective:

> Page 22 of the RMP, under the heading "Fluid Minerals" subtitled "Objective": *"To provide opportunity for exploration and development of fluid minerals such as oil, gas, and geothermal resources, using appropriate stipulations to allow for the preservation and enhancement of fragile and unique resources".*

The Proposed Action also in conformance with the Tonopah RMP because it has been determined that the lease parcels are a subset of:

> *"[The] total of 5,360,477 acres (88% of the Tonopah Planning Area)[that] is open to fluid minerals leasing subject to standard terms and conditions (p.22)."*

The Proposed Action is also in conformance with the Shoshone-Eureka RMP Part II, Section E, Management Actions Not Expressly Addressed by the Resource Management Plan, which

includes Minerals Objectives and Management Decisions brought forward unaltered from the Management Framework Plan (Record of Decision p. 29). Minerals Objectives 1, 2 and 3 led to Management Decisions 1 through 5 for leasable minerals (oil and gas). The objectives are as follows:

> Objective 1: Make available and encourage development of mineral resources to meet national, regional and local needs consistent with national objectives for an adequate supply of minerals.
>
> Objective 2: Assure that mineral exploration, development and extraction are carried out in such a way as to minimize environmental and other resource damage and to provide, where legally possible, for the rehabilitation of lands.
>
> Objective 3: Develop detailed mineral resource data in areas where different resources conflict so that informed decisions may be made that result in optimum use of the lands.

Management Decision #4, specifically addresses oil and gas leasing and states, "All areas designated by the BLM as prospectively valuable for oil and gas will be open to leasing except as modified by other resources."

1.4 Relationship to Statutes, Regulations, Policy, Plans and Other Environmental Analysis

Purchasers of oil and gas leases are required to abide by all applicable federal, state and local laws and regulations. This includes obtaining all required permits should lease development occur. Federal regulations and policies require the BLM to make public land and resources available based on the principle of multiple use. At the same time, it is BLM policy to conserve special status species and their habitats and ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as threatened or endangered by the United States Fish and Wildlife Service (USFWS).

The BLM must adhere to Section 106 of National Historic Preservation Act (NHPA). The BLM also must comply with Nevada State Historical Preservation Office (SHPO) protocol agreement, which is authorized by the National Programmatic Agreement between the *BLM*, the *Advisory Council on Historic Preservation* and the *National Conference of State Historic Preservation Officers*. All activities will be subject, but not limited to: Executive Order 11990 *Protection of Wetlands*, Executive Order 11988 *Protection of Floodplains*, the Clean Water Act, the Safe Drinking Water Act, the Onshore Oil and Gas Orders, Wild Free Roaming Horse and Burro Act, Endangered Species Act, Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

The Proposed Action and alternatives are in conformance with the National Environmental Policy Act (NEPA) of 1969, (P.L. 91-190 as amended (42 USC §4321 et seq.); Mineral Leasing Act (MLA) of 1920 as amended and supplemented (30 USC 181 et seq.); the Federal Oil and Gas Leasing Reform Act of 1987, which includes the regulatory authority under 43 Code of Federal Regulations (CFR) Part 3100, Onshore Oil and Gas Leasing, 43 CFR Part 3160, Onshore Oil and Gas Operations and Title V of the Federal Land Policy and Management Act of 1976

(FLPMA) Right-of-Way (ROW) under regulatory authority under 43 CFR Part 2800 for ROWs.

1.5 Scoping and Public Involvement

The BMDO interdisciplinary team participated in internal scoping meetings on December 18, 2013 and January 7, 2014. During the scoping meetings, specific parcels were recommended for deferral based on resource concerns and land use conflicts. The list of parcels recommended for deferral can be found in Appendix C.

Native American consultation letters for the July 2014 Lease Sale were sent on December 16, 2013. They were sent to Battle Mountain Band, South Fork Band, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Timbisha Shoshone Tribe and Fallon Pointe Shoshone Tribe. On January 22, 2014, resource specialists met with a representative of the Duckwater Shoshone Tribe and descendants of the Big Smokey Valley Tribe. Lease parcels of interest to the tribes were visited on that day.

On January 8, 2014 BLM also received a letter from the Yomba Shoshone Tribe. A meeting was held on February 14, 2014.

During the course of this government to government consultation meeting with the Yomba Tribal Council, Tim Coward, Tonopah Field Office Manager, updated the council on the proposed oil and gas lease sale. He discussed the leasing process, the role of lease stipulations in the protection of natural and cultural resources, the Application for Permit to Drill (APD) process, cultural resources review and the site-specific evaluation process.

Nevada Department of Wildlife (NDOW) was informed of the lease sale on December 13, 2013. A response letter was received from NDOW on January 27, 2014. The EA was posted on the internet by way of ePlanning's Land Use Planning and NEPA Register from February 12, 2014 through March 13, 2014 for public review and comment.

Most comment letters received were in form letter format, generated by a wild horse advocacy group. The 5,100 form letters generated three specific comments that were addressed in Appendix E. The majority of the commenters expressed concerns with regard to site-specific impacts to wild horse and burros, water usage, hydraulic fracturing, potential ground and surface water contamination associated with exploration and development activities and a host of other concerns regarding impacts to natural resources.

In response to these concerns, an additional 36 nominated parcels comprising approximately 44,311 acres are being deferred until a reevaluation of ground and surface waters and other natural resource values, including wildlife habitat and land-use conflicts can be conducted. The Nevada BLM State Office drafted a white paper on Hydraulic Fracturing (HF) for Nevada while this EA was out for public comment. This white paper has since been finalized and included in this EA as "Appendix F", which provides supplemental information on HF processes and potential impacts to resources.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Proposed Action is to offer for competitive sale 112 of the 166 nominated parcels that were sent to the BMDO for review. The acreage nominated for leasing was 285,364 acres and the acreage to be offered is 193,056 acres. Fifty-five parcels have been identified for complete deferral due to natural resource concerns and land use conflicts. Nine parcels have been identified for partial deferral for these same reasons. The 64 complete or partial parcels comprise 92,308 acres or 32 percent of the original total. The specific parcels and reasons for deferral may be found in Appendix C.

Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities. If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease; ownership of the minerals revert back to the federal government and the lease can be resold. The stipulations and notices that would be attached to the offered leases may be found in Appendix B.

2.2 No Action Alternative

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the Proposed Action would not take place. In the case of a lease sale, this would mean that all expressions of interest to lease (parcel nominations) would be denied or rejected.

Under the No Action Alternative, the BLM would withdraw all 166 lease parcels from the July 2014 lease sale. Surface management would remain the same and ongoing oil and gas development would continue on surrounding leased federal, private and state lands.

If the BLM does not lease these Federal mineral resources, demand would likely be addressed through imports or production elsewhere.

2.3 Alternatives Considered but Eliminated from Further Analysis

The BMDO staff considered leasing all 166 parcels that were nominated for leasing. However, during scoping, it was determined that there were specific resource conflicts and land use conflicts that would require deferring specific parcels. This Alternative has been eliminated from further analysis.

2.4 Reasonably Foreseeable Development Scenario

2.4.1 Trends and Projections for Oil and Gas Exploration in the BMD

Oil production data from the Nevada Bureau of Mines and Minerals (Figure 2) show that oil and gas production in the state has fallen off since the early 1990s and has flattened out at less than 500,000 barrels per year over the last several years.

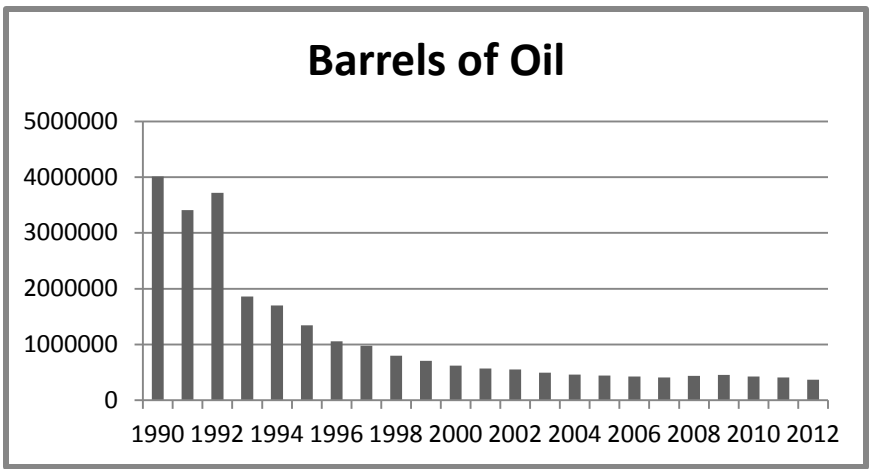


Figure 2. Oil production trends in Nevada from1990 through 2012.

As part of the 1997 Tonopah RMP, the BLM conducted a RFD scenario for oil and gas exploration and development. The RFD projected that 30 wildcat wells would be drilled through the year 2014 for a total disturbance of 296 acres. It also projected a number of additional production wells in established old fields and estimated a total future surface disturbance of 131 acres. The 1997 RFD also projected the development of two additional oil fields with a total future disturbance of 944 acres.

This assessment provides a clear basis for estimating a low development potential for oil and gas disturbance that might indirectly result from the July oil and gas lease sale. Conservatively, over the next ten years, 710 acres of disturbance could be expected to occur in the TFO, where the majority of the sale parcels would be located. Considering that the total number of acres in this lease sale for the TFO, the total amount of disturbance could be expected to be less than one percent of the lease sale area.

A relatively small number of the sale parcels would be located in the Mount Lewis Field Office (MLFO) area. According to the 2006 *Environmental Assessment for Oil and Gas Leasing within Portions of the Shoshone-Eureka Planning Area*, the overall potential for oil and gas exploration and development in this area is also low. The western portion of the planning area was considered to have a lower potential when compared to that of the eastern portion. The eastern portion of the Shoshone-Eureka planning area was considered to have moderate to high potential because it is located on a strike between Pine Valley and Railroad Valley, the two major production areas in the State. In addition, the geologic setting is similar.

While oil and gas interest has increased over the last 25 years in the MLFO area, very few exploratory wells have been drilled; an average of one exploration well was drilled per year between the years of 1980 and 2004. Exploration interest since during this time has focused on the eastern portion of the MLFO area, specifically in Eureka County, which is consistent with the geologic potential of the area. However, there have not been any wells drilled in the MLFO area in the last five years. Like the TFO area, the potential for oil and gas exploration and production in the MLFO can also be considered very low.

2.4.2 Typical Oil and Gas Exploration and Development Activities

Despite the low predicted potential of the proposed lease parcels, at any point during the 10-year term of the lease, the lessee, or operator may submit specific plans for some level of proposed development. Typical oil and gas development operations occur in phases, each of which occurs in a more or less predictable sequence that is contingent on the success or failure of the previous phase.

Geophysical Exploration

Geophysical exploration is used to obtain detailed geologic information. A variety of exploration methods are employed, ranging from placing electrodes in the ground, to detonating explosives to create shockwaves, to employing specially constructed off-road vehicles to produce vibrations. The most commonly used method in eastern Nevada is the vibroseis technique, which uses large off-road vehicles with "thumpers" to generate shockwaves for two or three dimensional surveys.

Exploration Drilling

Exploratory drilling (a wildcat well) begins development of a lease. An Application for Permit to Drill (APD) is filed with the BLM. A field examination is conducted and NEPA review is completed before a drilling permit is issued. An access road and a well pad are constructed for each well, if needed. Total disturbance attributed to drilling an exploration well is usually limited less than ten acres for the pad and access road. Statistically, over 95% of exploration wells are dry.

Well Stimulation and Fracturing

Well Stimulation may be used to enhance oil recovery. Several methods of well stimulation could be used. HF is one of these methods that may be reasonably foreseeable for leases proposed for sale. HF is the process of applying high pressure fluid to a subsurface formation via a wellbore, to the extent that the pressure induces fractures in the rock. Typically, the induced fractures would be propped open with a granular "proppant" to enhance fluid connection between the well and formation. The process was developed experimentally in 1947 and has been used routinely since 1950. The Society of Petroleum Engineers (SPE) estimates that over one million HF procedures have been conducted in the United States and tens of thousands of horizontal wells have been drilled and hydraulically fractured. The process can increase the yield of a well and development of HF methods and the drilling technology in which it is applied (in particular, long wells drilled horizontally within zones of interest) have enabled production of oil and gas from tight formations formerly not economically feasible.

HF procedures for mitigating potential environmental impacts may include:

- Wells are cased multiple times and sealed with cement between the wellbore and the formation. Well integrity is tested throughout the process.

- Drilling and HF fluids are either contained in a pitless system (above ground tanks) or a lined pit. Cuttings could be contained in roll-off boxes for hauling to disposal or surface casing interval cuttings could be spread over the site during reclamation.

- HF fluids are recovered to a large degree in "flowback" or produced water when the well is tested or produced.

- All recovered fluids are generally handled by one of four methods:
  - Underground injection;
  - Captured in steel tanks and disposed of in an approved disposal facility;
  - Treatment and reuse; and
  - Surface disposal pits

- Drilling cuttings could be land farmed and buried on site 3 feet below root zones. Any cuttings that do not fit this waste profile will be disposed of at an approved disposal facility.

For a more in depth look at HF procedures and risks, please refer to the "Hydraulic Fracturing White Paper" (Appendix F).

In-Field Drilling

In-field drilling of additional exploration wells typically occurs in order to define the limits of the oil or gas reservoir when initial drilling has located oil or gas. The process of in-field drilling is the same as that employed for initial exploratory drilling, although new roads and pads may not be required in every instance.

Production

Production only occurs if oil or gas can be transported to a market and sold at a profit. In the Battle Mountain District, pumped oil is generally piped a short distance for temporary storage, then trucked to a refinery for processing. This basic method of transport is not likely to change because of the small quantity of resource estimated to be present in the Battle Mountain District. Production facilities may include one or more of the following: a well head; pumping equipment; a separation system; pipelines; a metering system; storage facilities; water treatment and injection facilities; cathodic protection systems; electrical distribution lines; compressor stations; communication sites; roads; salt water disposal systems; dehydration sites; and fresh and salt water plant sites.

Well Abandonment

Well abandonment may be temporary or permanent. Wells are sometimes shut-in because pipelines or roads needed for production and marketing don't exist and the cost for construction is not justified by the quantity of oil discovered. These wells may later be reentered when their production can be marketed. The permanent abandonment of a well occurs when the well is determined to no longer have a potential for economic production, or when the well cannot be used for other purposes.

Reclamation

Reclamation includes removal of facilities and reclamation of surface disturbance. In the case of a producing well, reclamation will be done after production has ceased. In the case of exploration wells which do not find economically recoverable amounts of oil, initial reclamation (re-contouring), is usually completed the following year which provides for sufficient time for the

reserve pit to dry out. After revegetation of the site is completed, usually within two to three years, reclamation is complete.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the existing condition of natural and cultural resources in the lease sale area and presents an impact analysis which predicts how these resources might be affected by the implementation of the Proposed Action.

3.1 Supplemental Authorities to be Considered

To comply with the National Environmental Policy Act (NEPA), the Bureau of Land Management is required to address specific elements of the environment that are subject to requirements specified in statute, regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). The following table (Table 1) outlines the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation.

Supplemental Authority	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Air Quality			√	See discussions in Sections 3.4.1 and 4.3.1.
Area of Critical Environmental Concern (ACEC)	√			The nominated lease parcels are not located in or near any ACECs.
Cultural/Historical			√	See discussions in Sections 3.4.2 and 4.3.2.
Environmental Justice	√			Drilling activities often provide a few short-term employment opportunities that may be afforded to low income or disadvantaged individuals. This would be a small but positive socioeconomic benefit at the APD stage which will require further analysis
Farmlands Prime or Unique	√			There are no Prime or Unique Farmlands in the Battle Mountain District.
Noxious Weeds/Invasive Non-native Species			√	See discussion in Sections 3.4.7 and 4.3.7.
Native American Religious Concerns			√	See discussion in Sections 3.4.3 and 4.3.3.
Floodplains			√	See discussion in Section 3.4.5 and 4.3.5.
Riparian/Wetlands/			√	See discussion in Sections 3.4.5 and 4.3.5.
Threatened, Endangered Species			√	See discussion in Sections 3.4.4 and 4.3.4.

Supplemental Authority	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Migratory Birds			√	See discussion in Sections 3.4.4 and 4.3.4.
Waste – Hazardous/Solid			√	See discussion in Sections 3.4.6 and 4.3.6.
Water Quality			√	See discussion in Sections 3.4.5 and 4.3.5.
Wild & Scenic Rivers	√			The nominated parcels are not located in or near any wild and scenic rivers.
Wilderness	√			Some of the nominated lease parcels are located near the Antelope Range Wilderness Study Area (WSA) but the WSA is not affected by the nominated lease parcels.
Forests and Rangelands (HFRA only)	√			This is not a Healthy Forest Restoration Act (HFRA) related proposal, thus the HFRA does not apply.

Table 1. Supplemental Authorities Considered in the EA.

3.2 Other Resources

Other resources that have been considered for this environmental assessment (EA) are listed in Table 2 below. Elements that may be affected are further described in the EA. For those resources that would not be affected, rationale is provided.

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Fire Management	√			The Proposed Action is limited to leasing and there is no authorized ground disturbing activity associated with the lease, there is no need for detailed analysis of Fuels or Fire Management. Impacts from exploration and development activities would be analyzed under a separate, site specific analysis.
Forestry			√	See discussion in Sections 3.4.17 and 4.3.17
Grazing Management			√	See discussion in Sections 4.4.11 and 4.3.11.
Land Use Authorization			√	See discussion in Sections 3.4.12 and 4.3.12.
Minerals			√	See discussion in Sections 3.4.8 and 4.3.8.
Paleontological Resources	√			
Recreation			√	See discussion in Sections 3.4.14 and 4.3.14.
Socio-Economic Values			√	See discussion in Sections 3.4.15 and 4.3.15.
Soils			√	See discussion in Sections 3.4.9 and 4.3.9

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Special Status Species			√	See discussion in Sections 3.4.4 and 4.3.4
Vegetation			√	See discussion in Sections 3.4.10 and 4.3.10.
Visual Resources			√	See discussion in Sections 3.4.13 and 4.3.13
Wild Horses and Burros			√	See discussion in Section 3.4.16 and 4.3.16.
Wildlife			√	See discussion in Sections 3.4.4 and 4.3.4.

Table 2. Other Resources Considered in the EA.

3.3 Environmental Impacts of No Action Alternative

Under the No Action alternative, the lease parcels would not be sold. This means that no on-the-ground actions would occur (geophysical exploration, exploration drilling, etc.) that would have the potential to impact resources. Since there would not be potential impacts to resources, it is not considered further in the EA.

3.4 Impacts Requiring Further Analysis

Through internal scoping, the following resources have been determined to be present and potentially affected by the Proposed Action: air quality, cultural resources, noxious weeds, wetlands/riparian zones, forestry, minerals, soils, migratory birds, water quality/hydrology, vegetation, wild horses and burros, visual resource management, wastes (hazardous and solid), threatened and endangered species, special status species, Native American concerns, wildlife, range resources, lands and realty, recreation and socioeconomics. The effects of the Proposed Action on these resources will be brought forth for further analysis.

There would be no direct impacts (i.e., impacts that would occur during the implementation of the Proposed Action) from issuing new oil and gas leases because leasing does not directly authorize oil exploration and development activities. However, if a lease is sold, the lessee retains certain irrevocable rights. For example, according to 43 CFR § 3101.1-2, once a lease is issued to its owner, that owner has the *"right to use as much of the lease lands as is necessary to explore for, drill for, mine, extract, remove and dispose of the leased resource in the leasehold"* subject to specific nondiscretionary statutes and lease stipulations.

If an Application of a Permit to Drill (APD) is received for a purchased parcel, a separate, site-specific NEPA analysis would be required to disclose any potential environmental impacts to resources on public lands. Potential impacts may be caused by any or all of the oil and gas exploration and development activities described in Section 3.4. The reader should note that in the following sections only indirect impacts (i.e., impacts that occur at some point after the implementation of the Proposed Action) are considered.

3.4.1 Air Quality

Affected Environment

Weather in central Nevada is characterized by low humidity with large diurnal variations in temperature. Prevailing wind patterns are generally from the west but locally follow the north-south orientations of the mountain ranges. Occasional intense winds can cause localized dust storms and decreased visibility.

Air quality in Battle Mountain District has been designated as "attainment/unclassified" (which means it either meets, or is assumed to meet, the applicable federal ambient air quality standards) for all standard ("criteria") air pollutants (U.S. Environmental Protection Agency, 2007). The Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Air Pollution Control has been delegated responsibility by both the U. S. Environmental Protection Agency and the State of Nevada to regulate emissions of air pollutants in Nevada.

The lease parcels are not located in or adjacent to any mandatory Class I (most restrictive) federal air quality areas, U.S. Fish and Wildlife Service Class I air quality units, or American Indian Class I air quality lands.

Environmental Consequences

Potential indirect impacts would result from exploration activities where the fine-grained nature of some soils within the lease area would likely contribute to a local increase in dust particles from mineral materials mining and access road and well pad construction. The effect on air quality would be an increase in fugitive dust related to freshly disturbed ground surfaces and exhaust fumes from motorized equipment during site construction and drilling activities. Increased traffic on the existing roads would also add to the total; however, for most drilling activities, the impacts would be minor and would occur over a two to three week period. Impacts to air quality would cease when these activities cease. No additional mitigation measures are necessary at this time. However, if parcels were developed in the future, site-specific mitigation measures and Best Management Practices (BMPs) would be attached as Condition of Approval (COA) for each proposed activity, which would be analyzed under their own site-specific NEPA analysis. All operations would comply with applicable air quality standards.

Since oil and gas exploration activity is expected to be minimal (see Section 3.4) impacts to air quality are not expected to be significant. The Proposed Action would not result in an exceedence of the National Ambient Air Quality Standards (NAAQS) standards.

3.4.2 Cultural Resources

Affected Environment

Lease parcels for the July 2014 lease sale are located in nine different regional areas: In the Shoshone Range, in and around Iron Mountain; the Reese River valley along the western flank of the Toiyabe Range and just south of Austin, Nevada; Simpson Park, just east of Water Canyon; along the eastern and western slopes of the Antelope Range just south of the Eureka/ Nye county boundary; in the Big Sand Springs valley, west of the Pancake Range and south and west of the Red Hills; the south end of the Big Smokey Valley, west of Tonopah; along the northern edge and north of the Royston Hills; the southern end of the Toquima Range between the Ralston and

Big Smokey valley; and in the Big Smokey Valley between the Toiyabe and Toquima Ranges from Kingston to Round Mountain.

All of these parcels lie within areas of high probability for significant cultural resources. With the exception of one of these proposed areas (#7-Royston Hills), partial inventories for cultural materials have been completed within each of the general parcel areas, however completed cultural inventories represent less than one percent of each of these areas. Additionally, areas of extreme cultural sensitivity have been identified within these regions and the potential for significant impacts within individual regional areas and specific lease parcels exists. Within the nine regional areas identified here, the Big Smokey Valley has great potential for cultural disturbance through project activities due to a high level of historical Native American presence within the valley. Cultural concerns for each of the nine identified areas area as follows:

Shoshone Range, in and around Iron Mountain

Less than one percent of this area has been inventoried for cultural presence. One cultural site has been identified. One cultural sensitivity area has been identified within one mile of this group of parcels. One Traditional Cultural Place has been identified within this cluster of parcels.

Reese River Valley along the western flank of the Toiyabe Range

Approximately two percent of this area of proposed lease parcels has been inventoried for cultural resource presence. Four cultural sites and five ethnohistorical areas have previously been identified within this area.

Simpson Park

Five percent of this proposed lease area has been previously inventoried and two cultural sites have been previously identified.

Eastern and western slopes of the Antelope Range

Within the lease proposal area on the western slope of the Antelope range less than one percent has been inventoried. Five cultural sites and two areas of cultural sensitivity have been identified. Along the eastern slope less than one percent has been inventoried and two cultural sites have been previously inventoried.

Big Sand Springs Valley

Approximately twenty percent of this proposed lease area has been inventoried for cultural presence. Forty one cultural sites have been previously recorded in this proposed lease area.

South end of Big Smokey Valley

Ten to fifteen percent of these proposed lease parcel areas have been inventoried for cultural. Twenty eight cultural sites have been previously identified.

Royston Hills

No cultural inventories within this proposed area have been completed and subsequently cultural presence is unknown.

South end of the Toquima Range

Less than five percent of this proposed lease parcel area has been inventoried for cultural presence. Twenty two cultural sites have been previously identified.

Big Smokey Valley

Less than ten percent of this area has been inventoried for cultural presence. Over 500 cultural sites, seven ethnohistorical areas and eleven areas of cultural sensitivity have been previously identified within the proposed lease area of the Big Smokey valley.

Activities proposed under a lease will be evaluated on a case by case basis for compliance with Section 106 of the National Historic Preservation Act (NHPA) prior to any project implementation or ground disturbing activities. This includes project planning, cultural inventory, National Register of Historic Places (NRHP) eligibility criterion evaluation and mitigation of sites eligible for listing in the NRHP and in accordance with the Nevada State Protocol Agreement (January 2013).

The Archeological Resource Protection Act (ARPA: 43 CFR 7.4, 7.14, 7.15, 7.16) provide for civil and/or criminal penalties for the disturbance of archaeological resources on federal lands. The Native American Graves Protection and Repatriation Act (NAGPRA: 43 CFR 10) protects items of cultural patrimony, Native American Funerary Items, Native American human remains and sacred objects.

If cultural resources, Native American human remains, funerary items, sacred objects or objects of cultural patrimony are discovered during any phase of project implementation all operations will cease in the vicinity, the appropriate land manager will be notified and adequate protection will be provided to the discovery. The BLM will be notified immediately, first by telephone and then followed up with written confirmation (43 CFR 10.4(c), (d) and (g)); Nevada State Protocol Agreement VIII (b). Notification should be made to Doug Furtado, District Manager, Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV 89820, (775-635-4000). No activity in the vicinity of such discovery will continue until a Notice to Proceed is issued by the Authorized Officer.

Environmental Consequences

Direct and indirect effects on cultural resources cannot be determined until site specific project proposals are analyzed at the APD stage of development. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.3 Native American Religious Concerns

Affected Environment

The area described in the Proposed Action lies within the traditional territory of the Western Shoshone and possibly the Paiute Tribes. Sites and resources considered sacred or necessary to the continuation of tribal traditions include, but are not limited to: prehistoric and historic village sites, pine nut gathering locations, sites of ceremony and prayer, archaeological sites, burial locations, “rock art” sites, medicinal/edible plant gathering locations, areas associated with creation stories, or any other tribally designated Traditional Cultural Property. Specific locations

in the area were not identified or shared. Future Native American Consultations in the area may reveal such sites, activities, or resources.

The majority of lands within the proposed action area have not been analyzed for cultural resources or Native American Religious Concerns. Therefore, the BLM contacted the Battle Mountain band, the South Fork band, the Ely, Timbisha, Duckwater, Yomba Shoshone Tribes and the Fallon Shoshone - Paiute Tribe to identify areas of concern, mitigation measures, operating procedures or alternatives that may eliminate or reduce impacts to any existing tribal resources.

Environmental Consequences

Although the act of selling oil and gas leases does not directly authorize exploration, development, or production, or any other related ground disturbing activities, the potential exists to impact Native American sites of a spiritual, cultural, or traditional nature. Impacts to cultural sites can be minimized and/or mitigated when affected Tribes provide input and actively and fully participate in the decision making process.

Impacts to cultural resources are expected to be minimal because exploration activity is expected to be minor and temporary. However, if parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.4 Wildlife Resources

Regulatory Framework

BLM Special Status Species

The lease area may contain BLM BMDO special status species (SSS) plants, animals or their habitat (see Appendix D for the BMDO SSS list). BLM SSS are defined as those plant and animal species for which population viability is a concern, as evidenced by: 1) significant current or predicted downward trend in population numbers or density, or 2) a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution. SSS also include federally listed species under the Endangered Species Act (ESA; i.e., threatened, endangered or candidate; see section below). These SSS animals are protected under provisions of the ESA or under BLM Manual 6840, *Special Status Species Management*. BLM has species-specific recommendations to avoid or modify activities that are likely to disturb SSS or severely degrade critical habitat. In many cases, the BLM requires that surveys are conducted for SSS species. BLM will not approve any ground-disturbing activity that may negatively affect federally listed species or critical habitat, until it completes its obligations under applicable requirements of the ESA as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

Endangered Species Act (ESA)

In accordance with Section 7 of the ESA, federal agencies must "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species." The purpose of the Act is to provide a means for conserving the ecosystems upon which threatened and endangered species depend and to provide a program for

protecting these species. The ESA defines an endangered species as a species that is in danger of extinction throughout all or a major portion of its range. A threatened species is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a major portion of its range. This Act also address species that have been proposed for listing as either threatened or endangered, but for which a final determination has not been made. These so-called "candidate" species are those for which the US Fish and Wildlife Service (USFWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other, higher priority listing activities. Critical habitat is a specific area or type of area that is considered to be essential for the survival of a species, as designated by the USFWS under the ESA.

Within the BMD, there are eight listed as threatened, endangered, proposed, or candidate species by the USFWS (see Appendix D)**.** Of these, greater sage-grouse (candidate species) are the only species likely to occur in the lease sale parcels. However, parcel sales will not occur in Preliminary Priority Habitat (PPH) or within certain areas of Preliminary General Habitat (PGH) that was determined by site visits to be of high-value.

BLM and Nevada Department of Wildlife Memorandum of Understanding

Wildlife and fish resources and their habitat on public lands are managed cooperatively by the BLM and NDOW under a MOU as established in 1971. The MOU describes the BLM's commitment to manage wildlife and fisheries resource habitat and the NDOW's role in managing populations. The BLM meets its obligations by managing public lands to protect and enhance food, shelter and breeding areas for wild animals. The NDOW assures healthy wildlife numbers through a variety of management tools including wildlife and fisheries stocking programs, hunting and fishing regulations, land purchases for wildlife management, cooperative enhancement projects and other activities.

Nevada Department of Wildlife Programs

The NDOW is the state agency responsible for the restoration and management of fish and wildlife resources within the state. The NDOW administers state wildlife management and protection programs as set forth in NRS Chapter 501, Wildlife Administration and Enforcement and NAC Chapter 503, Hunting, Fishing and Trapping; Miscellaneous Protective Measures. NRS 501.110 defines the various categories of wildlife in Nevada, including protected categories. NAC 503.010-503.080, 503.110 and 503.140 lists the wildlife species currently placed in the state's various legal categories, including protected species, game species and pest species.

Migratory Bird Treaty Act and Migratory Bird Conservation Act

Migratory birds, with the exception of native resident game birds, are protected under the provisions of the Migratory Bird Treaty Act (MBTA) of 1918. Under this act, nests with eggs or the young of migratory birds may not be harmed, nor may any migratory birds be killed. Measures to prevent bird mortality must be incorporated into the design of project design. To comply with the MBTA, it is recommended that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential disturbance of breeding birds or their nests and young. Disturbance of breeding birds or

destruction of nests with eggs or young is a violation of the MBTA. The BLM recommends that land clearing be conducted outside the avian breeding season. For most birds, the breeding season is considered to be from April 1 – July 31 (but see guidelines for Raptors and Eagles below). If land clearing is not feasible outside of the breeding season, the BLM recommends that a qualified biologist survey the area prior to land clearing. These surveys are only good for 14 days. If activity is not completed before that window is finished then another survey may be needed. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting of food) is observed, a protective buffer (the size depending on the habitat requirements of the species should be delineated and the entire area avoided until young fledge or the nest is no longer occupied.

Guidance for raptors differs from migratory songbirds in that 1) the nesting season is extended (March 1- July 31) and 2) the survey area is larger (surveys will be conducted in the project area in addition to a 1 mile buffer surrounding the proposed surface disturbance). This survey buffer may be reduced or altered based on topography and the presence of other physical barriers.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668) applies primarily to taking, hunting and trading activities that involve any bald or golden eagle. The act prohibits the direct or indirect take of an eagle, eagle part or product, nest, or egg. The term "take" includes "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Golden eagles are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, both of which prohibit take.

The USFWS has guidance for proposed projects that have the potential to impact eagles or their habitat. Generally, the steps in these guidelines include 1) surveying for nests within an appropriate radius of the project, 2) developing an eagle conservation plan (ECP) in cases where eagles and/or their nests are likely to be impacted, 3) determining if the project has the potential to disturb breeding behavior and 4) determining if the proponents need to apply for a permit to authorize unintentional take.

Surveys for golden eagle nests will be designed in coordination with BMD biologists to target the most probable locations near the parcels.

Other Regulations

The Sikes Act is federal legislation that authorizes the USDI to plan, develop, maintain and coordinate programs with state agencies for the conservation and rehabilitation of wildlife, fish and game on public lands. The Fish and Wildlife Conservation Act of 1980 encourages federal agencies to conserve and promote the conservation of non-game fish and wildlife species and their habitats.

Affected Environment

The BMD provides habitat for approximately 73 mammals, 231 birds, 24 reptiles, 7 amphibians, 19 fish species and numerous invertebrate species (many of which have yet to be inventoried or identified to species). Several of these wildlife species are likely to occupy the oil and gas lease sale parcels, including migratory birds, golden eagles and other raptors, greater sage-grouse, bats, pronghorn antelope and mule deer. In particular, parcels that contain or are adjacent to

riparian areas (e.g., streams, springs, seeps and wet meadows) are likely to support a high density of wildlife species. Other important wildlife habitat types within the sale parcels include big sagebrush (mountain and Wyoming big sagebrush), low sagebrush, pinyon-juniper woodlands, aspen woodlands and salt desert scrub vegetation.

The following sections briefly discuss a few select wildlife species that are likely to occur on the oil and gas lease sale parcels and for which federal law or BLM policy and guidance directs management actions.

Migratory Birds

A wide variety of bird species protected by the MBTA are found throughout all habitat types within the lease parcels. These include raptors (i.e., hawks, eagles and owls) and many songbirds. Major avian communities within the BMD occur in sagebrush, salt shrub, pinyon-juniper, montane, riparian and aspen habitats. Species commonly occurring in pinyon-juniper habitats and that are known to occur or have the potential to occur include the pinyon jay, western bluebird, Virginia's warbler, black-throated gray warbler and Scott's oriole. Sage thrasher, Brewer's sparrow and sage sparrow use sagebrush habitats, while loggerhead shrike and green-tailed towhee also have potential to occur in the sagebrush habitats. Many songbird species are heavily dependent on healthy riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western United States (Rich 2002) and these communities are requisite for a diverse migratory bird community.

Eagles

Golden eagles are widespread year-round residents across the BMD. Golden eagles typically nest on large cliffs and they forage on small mammals such as jackrabbits, cottontails and ground squirrels in open shrub, grassland and forested habitats. Alternatively, bald eagles do not nest in the BMD, but they do occur during the winter near relatively large open bodies of water.

Greater sage-grouse

Greater sage-grouse occur within sagebrush habitat in Eureka, Lander and northern portions of Nye County on the BMD. Sage-grouse are largely dependent on sagebrush for nesting, brood rearing and foraging. Greater sage-grouse are known to occur in foothills, plains and mountain slopes where sagebrush meadows and aspen are in close proximity. Currently, sage-grouse are a candidate species for listing under the ESA.

Mule deer

Mule deer use a variety of vegetation types and habitats seasonally within the project area in their pursuit of forage, thermal cover and escape cover for seasonal needs. Vegetation important for mule deer includes serviceberry, snowberry, mountain mahogany, sagebrush, aspen, cottonwood, willows, chokecherry, wild roses, Pinyon pine, juniper, eriogonum, arrowleaf balsamroot, penstemon, phlox sp., sorrel, hawksbeard, lupine and numerous forbs. Riparian vegetation along streams, meadow areas and aspen stands are important fawn-rearing areas.

Pygmy rabbits

Pygmy rabbits are North America's smallest rabbits and the only ones that construct their own burrows. These burrows usually occur in stands of tall, dense sagebrush in areas with deep, loose soils. Big sagebrush is the primary food and may comprise up to 99 percent of food taken

in winter and 51 percent in the summer. Wheatgrass and bluegrass were highly preferred foods in the summer. Cheatgrass invasion is detrimental to pygmy rabbits. Shrub cover is necessary for protection during dispersal and cheatgrass monocultures may provide a barrier to dispersal.

Bats

Bats inhabit or utilize many niches across the Nevada and the BMD. These include caves, abandoned mines, cliffs, springs, riparian, aspen, Pinyon-juniper, subalpine coniferous forest and desert shrub habitats. Bats frequently forage in riparian areas and some of the most important bat habitat exists along perennial stream corridors.

Environmental Consequences

Direct and indirect effects on specific wildlife species cannot be determined until site specific project proposals are analyzed at the APD stage of development. In general, mammals such as pronghorn antelope will avoid and move away from oil drilling activities. Oil drilling is temporary in nature and wildlife will move back into the area after successful reclamation.

If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis. In addition, to reduce potential impacts to wildlife several parcels known to contain habitat for SSS of fish and wildlife have been proposed for deferral (see Appendix C). These include all parcels that may contain 1) SSS fish, 2) sage-grouse PGH in high-quality habitat (as determined by BLM field visits), 3) and bighorn sheep lambing areas. Several parcels were also deferred because they contain (or were adjacent to) perennial streams, a high-density of riparian habitat, or uplands important to mule deer and other wildlife. No oil and gas parcel sales will occur in sage-grouse Preliminary Priority Habitat (PPH).

3.4.5 Water Quality (Surface and Ground) and Quantity

Affected Environment

Water in the lease area is owned by the public of Nevada, however, the right to use surface and groundwater and management of water appropriations are administered by the Nevada Division of Water Resources (NDWR). The water quality standards of Nevada support other Federal laws such as the Clean Water Act of 1977, the Water Resources Planning Act of 1962, the Pollution Prevention Act of 1990 and the Safe Drinking Water Act of 1977 and are administered by the Nevada Division of Water Quality (NDWQ). The lease area is part of the Basin and Range Physiographic Province, a semiarid and arid desert environment with most precipitation originating as snow. Annual precipitation is highly variable. The average annual precipitation in Tonopah is 5.03 inches and March and April are the wettest months (WRCC 2013a). The average annual precipitation in Battle Mountain is 8.2 inches and April and May are the wettest months (WRCC 2013b).

Hydrographic Basins

The hydrographic basin is the basic management unit used by the NDWR. Table 3 identifies the hydrographic basin numbers, basin names and regions in which the proposed parcels are located. There are basins in the lease area that are designated.

Basin #	Basin Name	Region	Designated (Yes/No)	Perennial Yield (Acre Feet/Year)	Appropriations (Acre Feet/Year)
137B	Big Smoky Valley - Northern	Central Region	Yes	65,000	54,829
056	Upper Reese River Valley	Humboldt River Basin	No	37,000	36,573
137A	Big Smoky Valley – Tonopah	Central Region	Yes	6,000	24,011
139	Kobeh Valley	Central Region	Yes	16,000	12,639
138	Grass Valley	Central Region	No	13,000	13,318
155A	Little Smoky Valley - Northern	Central Region	No	5,000	5,055
150	Little Fish Lake Valley	Central Region	No	10,000	7,895
141	Ralston Valley	Central Region	Yes	6,000	4,307
151	Antelope Valley	Central Region	No	4,000	3,063
134	Smith Creek	Central Region	No	10,000	1,915
135	Ione Valley	Central Region	No	2,500	191
155C	Little Smoky Valley - Southern	Central Region	No	1,000	17
155B	Little Smoky Valley - Central	Central Region	No	100	2

Table 3. Hydrographic Basin Summary

The proposed lease parcels are located in hydrographic region 10, Central Region and 4, Humboldt River Region. The majority of leases are within hydrographic basin 137, Big Smokey Basin. Table 4 provides a summary of the proposed lease area:

# of Leasable Parcels	**# of Deferred Parcels**	**# of Partially Deferred Parcels**	**Basin Number**	**Basin Name**	**Hydrographic Region**
0	**4**	**0**	151	Antelope Valley	Central-10
78	**33**	**3**	137	Big Smokey	Central-10
0	**1**	**0**	138	Grass Valley	Central-10
7	**2**	**0**	135	Ione Valley	Central-10
0	**1**	**0**	139	Kobeh Valley	Central-10

0	**2**	**0**	150	Little Fish Lake Valley	Central-10
6	**5**	**0**	144	Little Smokey Valley	Central-10
11	**0**	**0**	141	Ralston Valley	Central-10
4	**1**	**1**	134	Smith Creek	Central-10
10	**5**	**6**	56	Upper Reese River	Humboldt-4

Table 4. Hydrographic sub-areas in which the proposed leases are located.

Surface Water

Most of the lease area consists of closed drainage basins, with a few watersheds to the north flowing toward the Humboldt River. According to the National Hydrography Dataset, the lease area contains 11 springs, 86 km of perennial streams, 1,642 km of ephemeral and intermittent streams, 168 acres of lakes and ponds, 361 acres of playa, 11 acres of swamp and marsh and 266 acres of reservoir bodies. Unsurveyed features may exist.

The magnitude of surface water discharge varies in space and time. With the exception of moist winters in 2006 and 2010-2011, the Great Basin has been abnormally dry or within drought conditions since 2000. Since early 2012, the BMD and much of the Central Great Basin have consistently been in states of moderate to exceptional drought.

The Nevada Administrative Code Chapter 445A identifies class waters, which generally include smaller perennial streams that are tributaries to the large rivers in the state. The classification process is ongoing and not all water bodies have been classified. Water bodies are classified according to their quality and potential beneficial uses. The water quality standards correspond to these classes.

Groundwater

Runoff from upland areas of the lease area often infiltrates into the groundwater as it flows across the broad alluvial fans that transition into wide basins. Groundwater is either directed toward the playa and is lost to the atmosphere as evapotranspiration or seeps into deeper aquifers that compose larger regional flow systems. Two regional flow systems have been extensively studied by the USGS, the Death Valley Regional Flow System (Belcher 2004) and the Basin and Range Carbonate Aquifer System (Welch et al. 2007). However, a large proportion in the middle of the Planning Area has not been studied. Perennial base flow from springs is largely driven by snowmelt runoff recharge. Depth to groundwater is highly variable throughout the Lease Area ranging from a few feet to hundreds of feet.

Nevada's groundwater quality standards are based on the assumption that groundwater should be maintained suitable for use as a drinking water source, unless the natural water quality prevents this. The State adopts the Federal primary and secondary drinking water standards (maximum

contaminant limits) for groundwater resources. The chemical character and quality of groundwater varies in the Lease Area and depends largely on the mineral content of the rock, residence time, evapotranspiration and temperature.
The perennial yield is defined as the maximum amount of groundwater that can be harvested each year over the long term without depleting the groundwater reservoir or it being in disequilibrium. Perennial yields were quantified by USGS reconnaissance reports from the late 1940s to the 1970s. A hydrographic basin that has more appropriations than perennial yield is identified as a designated basin; the BMD has 29 basins that are fully or partially designated.

Riparian/Wetland Zones

Water quality and supply is intimately related to the health of riparian and wetland ecosystems. Riparian and wetland areas are the most productive and important ecosystems on the BMD. They represent less than one percent of the area, but contain the majority of biodiversity and are vital ecologic functions. Research has shown that riparian and wetland habitat characteristically has a greater diversity of plant and animal species than adjoining areas. Approximately 86 kilometers of perennial stream and 1,642 kilometers of ephemeral or intermittent stream are within the parcels. These streams may have associated riparian habitat.

Floodplains

Federal Emergency Management Agency (FEMA)-designated Zone A flood hazard areas, which would be flooded during a 100-year, 24-hour runoff event, have been delineated in low-lying areas in the Leasing Area. There are a total of 6,133 acres of the Lease Parcels identified within Zone A flood hazard areas and will be subject to Federal Regulation and mitigation, however FEMA flood mapping data are not yet available in Esmeralda County, NV. Site specific analysis, to identify potential flood plain complications, will be required prior to drilling in parcels that meet this designation.

Municipal Watersheds

Areas within the lease area have been identified as having Municipal Water Supplies within the HUC-12 boundaries. Site-specific analysis, to identify potential impacts, would be required prior to drilling in parcels that meet this designation.

Environmental Consequences

Groundwater

There would be no direct impacts to groundwater due to oil and gas leasing because no authorization for surface disturbance would be granted. Impacts from development activities would be analyzed under a separate site-specific environmental analysis. All activities would be subject to BMPs, State and Federal Regulations and COAs. Potential impacts to groundwater by the development of a lease may include degradation of water quality and drawdown of existing water levels. Water quality issues may arise from either underground or surface contamination. The primary cause of underground degradation would be from improperly functioning well casings. Surface activities can degrade groundwater by infiltration of contaminants, particularly from sumps and spills. Areas with shallow groundwater levels would be at greater risk and may be subject to additional constraints. All required state and federal regulations would apply and site-specific stipulations and mitigation may be applied on the APD. For additional information on risks to groundwater from HF, refer to Appendix F.

Surface Waters

There would be no impacts to Surface Waters due to oil and gas leasing because no direct authorization of surface disturbance is expected. Impacts from development activities would be analyzed under a separate site-specific environmental analysis. All activities will be subject to BMPs, State and Federal Regulations and COAs. Potential impacts of lease development on surface waters may include changes to water quantity and quality. If future surface disturbing activities are proposed near surface waters or wetlands/riparian zones, the environmental analysis and record of decision will require additional mitigation. All operations would be required to comply with all state and federal regulations.

Riparian Areas and Wetlands

There would be no impacts to Riparian and Wetlands due to oil and gas leasing because no direct authorization of surface disturbance is expected. Impacts from development activities would be analyzed under a separate site-specific environmental analysis. All activities will be subject to BMPs, State and Federal Regulations and COAs. Surface disturbance adjacent to wetlands/riparian zones and adjacent flood plains has the potential to adversely affect the functioning condition of a riparian area's soil and watershed attributes, as well as, disturb or displace wildlife. In addition 23 parcels with important riparian and wetland resources have been recommended for deferral (See Appendix C).

3.4.6 Waste, Hazardous and Solid

Affected Environment

Oil and gas development, which can include exploration drilling, extraction, production facilities, pipeline transport, tanker loading and unloading, affect the environment through production of waste fluids, emissions and site impacts resulting from field development and related infrastructure. Hazards that may be encountered include the following: oil spills, produced waters, drill cuttings and fluids and hazardous materials.

Environmental Consequences

If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

Indirect impacts would include drilling fluid or hydrocarbon spills, leakage from improperly constructed sump ponds or waste water collection systems, improperly handled brine water from drilling and accumulations of solid waste, which could impact water quality or contaminate soils. Hydrocarbon spills could include hydraulic fluid, gasoline, oil, or grease from vehicles, generators and exploration drill rigs. Brine water from exploration drilling, if improperly disposed, could raise the pH and/or salinity of existing surface waters to unacceptable levels. Generations of nonhazardous solid waste could include small amounts of trash, drill cuttings, wastewater, bentonite and cement generated during drilling operations. For additional information on hazardous waste risks from HF, refer to Appendix F.

3.4.7 Noxious Weeds and Invasive, Non-native Species

Affected Environment

A noxious weed is a plant species that has been defined as a pest by law or regulation. The list of the species that are designated as noxious weeds within Nevada is found in the Nevada Administrative Code (NAC), Chapter 555, Section 010 (NAC 555.010). Currently the list contains 47 noxious weed species. When considering whether to add a species to the list, the Nevada Department of Agriculture (NDOA) makes a recommendation after consulting with outside experts and a panel comprising Nevada Weed Action Committee members. Per NAC 555.005, if a species is found probable to be "detrimental or destructive and difficult to control or eradicate", the NDOA, with approval of the Board of Agriculture, designates the species as a noxious weed. The species is then added to the noxious weed list in NAC 555.010. Upon listing, the NDOA will also assign a rating of "A", "B", or "C" to the species. The rating reflects the NDOA's view of the statewide importance of the noxious weed, the likelihood that eradication or control efforts would be successful and the present distribution of noxious weeds within the state.

An invasive species is defined as a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic concern or environmental harm or harm to human health (EO 13112, signed February 3, 1999).

Noxious weeds and invasive species occur on surface acres within the affected areas. Downy brome (cheatgrass), halogeton and other annual weeds are common along roadsides and on other disturbed areas. Russian knapweed, hoary cress, perennial pepperweed, tamarisk and various thistles (Canada, musk and scotch) are also known to occur in these areas.

Other species have the potential to be introduced into newly disturbed areas. The inventory process is on-going to detect small, invasive populations as they begin to move into the district. Once a population is found, the BLM coordinates with various agencies, lease operators and land users to implement treatment to remove or control the population. For all actions on public lands that involve surface disturbance or rehabilitation, reasonable measures are required to prevent the introduction or spread of noxious weeds and invasive non-native species. These measures may include power washing or air blasting of construction equipment to remove soil, oil and vegetative parts and requirements for using certified weed-free seed and weed-free hay, mulch and straw. In addition, any actions that result in the introduction or spread of noxious weeds and/or invasive non-native species would be mitigated by standard weed management guidelines under the direction of the BLM.

Environmental Consequences

The proposed action would authorize leasing, which in turn, through site-specific EAs would authorize roads and drill pad construction. These subsequent activities would provide a mode of transport for noxious weeds and other invasive non-native species to become established. Oil and gas exploration and development may include staging, construction, maintenance and the use of motorized vehicles for transportation of personnel and equipment, which may increase the potential for new and expanded infestations. Wind, water, recreation vehicles, livestock and wildlife would also assist with the distribution of weed seed into the newly disturbed areas. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

To prevent the spread of noxious weeds and/or invasive non-native plant species, at the APD stage, the operator would be required to control any noxious weeds and\or invasive non-native species that become established within the disturbed areas involved with drilling and operating the well and continue weed control actions throughout the life of the project.

3.4.8 Geology and Minerals

Affected Environment

The Oil and Gas Lease area projected for sale in the MLFO, which is bounded by the Desatoya Mountains and the Tobin Range on the west and Diamond Mountains and Sulphur Spring Range on the east. The parcels in the TFO are located within three valleys: the Big Smokey Valley, which is bounded by the Toquima and Monte Cristo Ranges to the east and the Toiyabe and San Antonio Ranges to the west; the Ione Valley, which is bounded by the Cedar Mountain Range to the west, the Royston Hills to the south and the Toiyabe Range to the east; and the Big Sand Springs Valley, which is bounded by the Pancake Range to the east and the Hot Creek Range to the west. The BMD is located in the Basin and Range province. The Basin and Range province is comprised of north-south oriented mountain ranges separated by broad valleys, which covers most of Nevada. These mountains were formed by crustal blocks that moved relatively upward along parallel normal faults. Basins, or valleys, were formed by fault-bounded crustal blocks that moved relatively downward. Many of these faults are still active and earthquakes can occur. BMD geology has been deformed by successive mountain building events and extensive volcanic activity has occurred. There are no active mines or geothermal plants in the lease parcels although ten parcels (011, 074, 076, 079, 086, 087, 088, 089, 090 and 091) adjoin a geothermal lease. Additionally, twelve (12) parcels overly geothermal leases (012, 067-073 and 081-084). Two Butte prospects (parcel 097) and the Spaulding Salt Marsh property (parcel 158) overlaps the oil and gas lease parcels. There are sixteen parcels that lie within mine plan areas.

A variety of rock types can be found within the BMD. These rock types include: Lower Paleozoic sedimentary and volcanic rocks, Tertiary volcanic rocks, Upper Tertiary volcanic rocks and Quaternary alluvial and playa deposits.

Paleozoic Sedimentary and Volcanic Rocks

Paleozoic sedimentary and volcanic rocks represent the oldest sedimentary and volcanic rock outcrops in the district. These rocks consist primarily of carbonates (limestone and dolomite) and metamorphosed basalts. In the remainder of the district, the Paleozoic and Mesozoic sedimentary rocks are composed of carbonate rocks interbedded with silica-rich rocks, cherts, shales and volcanic rocks.

Mesozoic and Tertiary Intrusive Rocks

The majority of intrusive rocks are Mesozoic in age with a lesser amount of intrusive rocks emplaced during the Tertiary time. These rocks are predominantly granitic in composition.

Tertiary Volcanic Rocks

These volcanic rocks are composed primarily of rhyolitic ash flows, lava flows and welded tuffs.

Quaternary Rocks

Quaternary rocks consist of unconsolidated valley fill material (i.e., material eroded off of mountains), sand, gravel and alluvium. Also included are Quaternary basalt flows and Pleistocene lake beds with intercalated volcanic tuffs.

Neogene Rocks

The Neogene Period is a unit of geologic time starting 23.03 ± 0.05 million years ago. The Neogene Period follows the Paleogene Period of the Cenozoic Era. Under the current proposal of the International Commission on Stratigraphy (ICS), the Neogene would consist of the Miocene, Pliocene, Pleistocene and Holocene epochs and continue until the present.

Locatable Minerals

Locatable minerals are mostly metallic, nonmetallic, semi-precious and precious gemstones and rare earth elements. Metallic minerals include precious metals such as gold and silver and base minerals such as zinc, molybdenum, bentonite, nickel, cinnabar, lead, tin and copper. Some of the nonmetallic minerals are borax, feldspar, fluorspar and gypsum. One of the rare earth elements mined as a locatable mineral is uranium.

The potential that oil and gas interests may overlap with those of mineral exploration exists. However, based on past experience in Nevada most of the lands that are used for oil and gas exploration and production would be reclaimed within ten years. The majority of oil and gas exploration and development would be short-term and hence would not appreciably affect mineral exploration and development. Since locatable mineral operation plan boundaries exist within a 16 parcels that were nominated for sale, these are deferred at this time. These parcels include 47, 48, 49, 50, 61, 62, 64, 65, 66, 75, 77, 117, 118, 119, 125 and 126.

Saleable Minerals

Saleable minerals can only be acquired by purchase. They include, but are not limited to, the following: petrified wood, common varieties of sand, stone, gravel, pumice, pumicite, cinder, clay and rock. The most common are sand and gravel deposits. Gravel deposits are associated with colluvium, which was eroded off the mountain ranges. Other types of deposits include topsoil and sand. These types of saleable minerals are distributed throughout the BMD, but there is no ongoing major exploration for saleable minerals or active mining on the lease parcels.

Prior history in Nevada shows that oil and gas exploration and development activities would require up to 2.5 acres in gravel pit expansion. This small acreage would not greatly increase the amount of gravel pits, nor would it burden the communities that utilize gravel.

Leasable Minerals

Leasable minerals are those that may be extracted from leases on public lands and are subdivided into solid and fluid leasable mineral groups. Solid minerals include the following: coal, sodium, potassium and phosphate (and under certain conditions, sand, gravel and locatable minerals). Fluid minerals include oil and gas and geothermal resources.

In Nevada, oil and gas wells are typically associated with elevated water temperatures (approximately 160°F or higher) and conflicts may arise between geothermal and oil and gas

exploration development. Should such situations arise, these potential impacts could be mitigated through negotiations between operators.

Oil and Gas

The only oil and gas production that has occurred in the BMD is located within Railroad Valley; approximately twenty (20) miles east/southeast from the parcels located within Big Sand Springs Valley. Railroad Valley is the predominate area of oil and gas production in Nevada. However, interest in oil and gas leasing and exploration continues.

Geothermal

Lately interest in geothermal exploration has increased. Nevada leads the nation in geothermal energy production. Currently operating plants include: Washoe County (Galena 2, Galena 3, Richard Burdette, San Emidio, Steamboat Hills, Steamboat 1A, Steamboat 2, Steamboat 3); Churchill County (Brady, Desert Peak, Dixie Meadows, Salt Wells, Soda Lake 1 & 2, Stillwater 2); Lander and Pershing Counties (Jersey Valley, McGinnis Hills); Elko County (Tuscarora – formerly Hot Sulphur Springs 2); Eureka County (Beowawe); Humboldt County (Faulkner); Lyon County (Homestretch).

There are no oil and gas lease parcels that overlap current geothermal operations, although some of them are contiguous. Any issues that may arise could be mitigated by negotiation between the operators.

Environmental Consequences

The potential that oil and gas interests may overlap with those of mineral exploration exists. However, the majority of acres that may be used for oil and gas exploration and production are usually reclaimed within ten years. In most instances, oil and gas exploration and development are short-term endeavors and hence would not appreciably affect mineral exploration and development. Agreements between oil and gas and mineral operators could help to mitigate those acres that would be used for oil and gas production on a more long-term basis.

Oil and gas exploration and development activities could require up to 2.5 acres in gravel pit expansion. This small acreage would not greatly increase the amount of gravel pits, nor would it burden the communities that utilize gravel.

In Nevada, oil and gas wells are typically associated with elevated water temperatures (approximately 160°F or above) and conflicts may arise between geothermal and oil and gas exploration development. These potential impacts could be mitigated through negotiations between operators.

If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.9 Soils

Affected Environment

Differences in climate, relief, aspect, slope, landform, elevation and parent material among other factors contribute to the formation of different soil types. High variability of these factors within the project area creates a wide variety of soil types. Soils within the project area range from those typical in the valley floors that tend to be deep, poorly drained due to high clay content and highly alkali to those common in the higher mountain elevations which tend to be shallow young gravely soils with near neutral pH.

Existing soils surveys of the project area will be used to for evaluating land-use potential, potential plant communities and developing reclamation and rehabilitation plans. Three major soil orders dominate the soil types in the project area these are: Aridisols, Entisols and Mollisols. A brief description of each soil order is provided below.

Aridisols

Aridisols a mineral soil are found on light-colored surface horizons and have properties typical of soils in arid regions. Within the project area they are found mainly in the valley bottoms but may be found at higher elevation. These soils do not have water continuously available to them during the normal growing season. The period of water stress typically about 3 months. These soils are low in organic matter and may have accumulations of soluble salts and lime and tend to be alkali. Aridisols tend to be finer in texture than the other two orders.

Entisols

Entisols are found on recent landscapes, such as alluvium and disturbed sites. Soil texture tends to be more gravely and well drained. These are mineral soils that are very young and have not yet developed appreciable accumulations of soluble salts and lime. Soil horizon development is typically minimal. They occur in both the valley bottoms as well as the mountains. In the mountains these tend to make up the steeper more erodible soils whereas lower elevation they tend to be found in areas of deposition such as alluvial fans and floodplains. Thought these sites are typically xeric however, they are not as dry as the Aridisols.

Mollisols

Mollisols are found on dark-colored fertile surface horizons that have been formed under semiarid to sub-humid climate. Moisture availability is typically the highest in this type than the other two. These soils are rich in organic matter and are very fertile. In the project area, these soils mainly form in the mountains with grass communities. These soils are older and generally occur on more stable alluvial fans and terraces.

Environmental Consequences

There would be no direct impacts from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. However, it is reasonably foreseeable that oil and gas exploration and development would occur within the next 10 years. Direct impacts from these activities would be analyzed under separate site-specific EAs.

The BMD chose to defer all nominated parcels that contained key resources (e.g., parcels with shallow ground water, wetlands, perennial streams, springs, seeps and wet meadows, areas

containing SSS fish species, areas with important big game habitat and sage-grouse Preliminary Priority Habitiat).

If exploration and/or production activities were permitted activities such as: cross country travel, pipeline construction, road construction and drill pad construction would impact soil surfaces. These impacts include erosion of soils, disturbance to microbiotic crusts and soil compaction. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis

3.4.10 Vegetation

Affected Environment

Vegetation within the lease area provides forage and cover for wildlife, livestock, wild horses and burros within the project area. It also provides ground cover and root mass for soil stability and development. Vegetative cover also aids in infiltration of water into the ground. The type of vegetation that grows in a particular area depends largely on soil types and average precipitation. Ecological site descriptions including soil surveys are available. The information obtained from these surveys is used for evaluating land-use potential, potential plant communities and developing reclamation and rehabilitation plans. These ecological site descriptions provide detailed information regarding vegetative communities for each soil type and precipitation zone. The following vegetative communities have been identified as those affected by the proposed action and are discussed in detail below. Notably several plant species in the BMD have been identified as SSS (Appendix D). These occur in several of the vegetation communities described here.

Greasewood

This community occurs on floodplains and closed-basin bottomlands adjacent to playas. Greasewood is located on slopes that range from 0-2% with an elevation between 4,500-5,000 feet and occur in precipitation zones of 3-5 and 5-8 inches. Vegetation in this type is normally restricted to mounded areas that are surrounded by playa-like depressions or nearly level, usually barren, interspaces. This plant community is characterized by black greasewood (*Sarcobatus vermiculatus*), Basin wildrye (*Leymus cinereus*), inland saltgrass (*Distichlis spicata*) and alkali sacaton (*Spordoolus airoides*) are the most prevalent herbaceous species associated with this community. Saltgrass may extend into the interspace in some areas. Potential vegetative composition is typically 25% grasses, 5% forbs and 70% shrubs.

Salt Desert Shrub

This vegetative community occurs on alluvial terraces, fans and foothills on all aspects. Salt desert shrubs are located on slopes that range from 0-30%, with 0-8% slopes the most typical. Salt Desert Shrub occurs at elevations between 4,500-6,000 feet and within precipitation zones of 3-5 and 5-8 inches. The plant community is characterized by shadscale (*Atriplex confertifolia*), bud sagebrush (*Artemisia spinescens*) and some winterfat (*Krascheninnikovia lanata*). Bud sagebrush and winterfat are palatable salt desert shrub species. Bottlebrush squirreltail (*Elymus elymoides*) and Indian ricegrass (*Achnatherum hymenoides*) are key grass species associated with this vegetative community. Alkali meadows are included in this plant

community and consist of inland saltgrass and basin wildrye. Potential vegetative composition is typically 10% grasses, 5% forbs and 85% shrubs.

Big Sagebrush

This is the most extensive community within the project area, which occurs on terraces, alluvial fans and low rolling hills on all exposures. Wyoming and Big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*; *Artemisia tridentata* ssp. *tridentata*) occurs on slopes that range from 2-50% with elevations ranging from 4,500-6,000 feet and within the 8-12 inch precipitation zone. This plant community is characterized by Wyoming and Basin big sagebrush, Thurber's needlegrass (*Achnatherum thurberianum*), Indian ricegrass, Basin wildrye, bottlebrush squirreltail and Sandberg's bluegrass (*Poa secunda*). Arrowleaf balsamroot (*Balsamorhiza sagittata*) and Tapertip hawksbeard (*Crepis acuminata*) are important forb species associated with this vegetation type. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Black Sagebrush

This vegetative community occurs on low arid foothills, mountain side slopes and plateaus. Black sagebrush (*Artemisia nova)* occurs on slopes that range from 4-50% with elevations ranging from 5,000-7,000 feet and are associated with the 4-8 inch precipitation zone. Soils are often shallow over a calcareous pan, which limits effective water holding capacity and seeding success. Vegetation that characterizes this community consists of black sagebrush, bottlebrush squirreltail and Sandberg's bluegrass. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is characteristic for communities that occur in the higher elevations. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Low sagebrush

This vegetative community occurs on mountain side slopes and plateaus. Low sagebrush occurs on slopes that range from 4-75% with elevations ranging from 5,000-9,000 feet and are associated with the 8-12 inch precipitation zone. Soils are often shallow over a calcareous pan, which limits effective water holding capacity and seeding success. This vegetative community is characterized by low sagebrush (*Artemisia arbuscula*), bottlebrush squirreltail, Sandberg's bluegrass and bluebunch wheatgrass. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Mountain Brush

This community occurs on upland terraces and inset mountain valleys on all slope aspects. Mountain brush occurs on slopes that range from 4-50% with elevations ranging from 6,000-9,000 feet. These communities generally occur within the 12+ inch precipitation zone. The vegetative community is characterized by Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass, snowberry (*Symphoricarpos albus*), antelope bitterbrush (*Purshia tridentata*) and serviceberry (*Amelanchier utahensis*). Mountain brome (*Bromus carinatus*), mountain spray (*Holodiscus discolor*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*) and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) are other species associated with this community. Potential vegetative composition is typically 55% grasses, 15% forbs and 30% shrubs.

Pinyon-Juniper Woodlands

This community occurs on upper alluvial fans and in the higher mountainous regions with slopes ranging from 30-50%. Elevations range from 5,500-9,000 feet. This community occurs within the 10-22 inch precipitation zone. Lower elevations (5,000-6,500 feet) communities are dominated by juniper, mid elevations (6,500-7,500 feet) by both pinyon and juniper and high elevations (above 7,500 feet) are predominately pinyon pine. These plant communities are characterized by single-leaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). There are localized ecosystems which support other juniper species such as common juniper (*Juniperus communis*) and Rocky Mountain juniper (*Juniperus scopulorum*). The understory, although sparse, consists of bluebunch wheatgrass, Sandberg's bluegrass, Thurber's needlegrass, basin wildrye and needleandthread grass (*Hesperostipa comata*). Juniper and pinyon trees dominate these areas; however, mountain big sagebrush, antelope bitterbrush and curl-leaf mountain mahogany can be found within the community. Heavily wooded areas provide little forage and have a large amount of bare ground. Potential vegetative composition is typically 40% grasses, 15% forbs and 45% shrubs and trees.

Riparian

Small riparian communities occur within the project area and are associated with streams, springs and seeps where water is at or near the surface for the majority of the year. Species associated with this community include willow (*Salix* spp.), quaking aspen (*Populus tremuloides*), cottonwoods (*Populus fremontii*, *P. Balsamifera* ssp. *Trichocarpa trichocarpa*, *augustifolia*), water birch (*Betula occidentalis)*, red-osier dogwood (*Cornus sericea*), rushes (*juncas* ssp.) and sedges (*carex* ssp.) and cattail (*Typha latifolia*). Potential vegetative composition is typically 70% grasses and grass like species, 25% forbs and 5% shrubs.

Winterfat Bottoms

Winterfat communities occur generally in flats of drainage and flood plains. They typically occur in areas where slopes range from 0-2%. The elevation of this community ranges from 4000-6000 feet and within precipitation zones of 5-8 inches. Soils are typically sandy loam. The plant community is characterized and dominated by winterfat. It also includes vegetation such as bud sagebrush, Indian ricegrass and squirreltail. Potential vegetative composition is typically 10% grasses, 5% forbs and 85% shrubs.

Annuals

Although this vegetation type is not considered an ecological type, it is a plant community that accounts for portions of the project area. Areas that have been disturbed may be invaded by invasive annual species, sometimes to the exclusion of native species. Dominant plants are cheatgrass (*Bromus tectorum*) and/or halogeton (*Halogeton glomeratus*). Other plants often present in these areas are Russian thistle (*Salsola kali*), clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sisymbrium altissimum*) and Russian knapweed (*Centeurea repens*).

Environmental Consequences

There would be no direct impacts from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. However, it is reasonably

foreseeable that oil and gas exploration and development would occur within the next 10 years. Direct impacts from these activities would be analyzed under separate site-specific EAs.

If exploration and/or production activities were permitted activities such as: cross country travel, pipeline construction, road construction and drill pad construction would impact vegetation. These impacts include erosion of soils, disturbance or removal of vegetation and soil compaction. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis. Appropriate surveys will also be required for SSS plant species that have the potential to occur within sale parcels prior to the authorization of any surface disturbing activities.

3.4.11 Range Resources

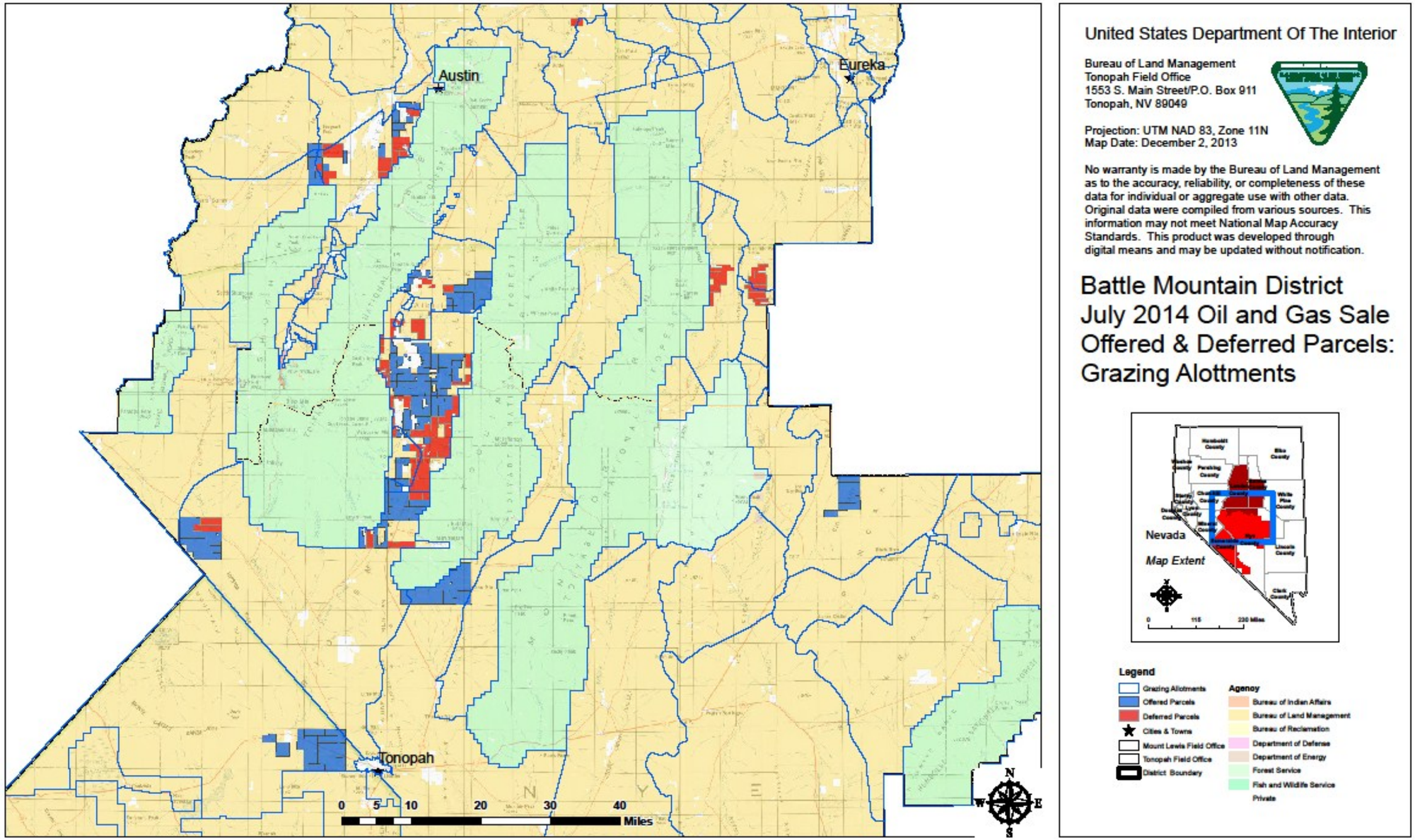
Affected Environment

Livestock production is a major industry within the BMD. The BMD Rangeland Management Program is responsible for authorizing grazing use. There are 17 grazing allotments within or overlapping the project area (Figure 3). The grazing allotments are comprised of both public and private lands. Grazing permits are issued to qualified individuals or entities. These grazing permits specify numbers, season of use, kind of livestock and amount of AUMs allowed for use, other terms and conditions may be added to grazing permits. Individual permittees or multiple permittees may operate on a single allotment. Various range improvement projects are also within these allotment boundaries. These projects may include: fences, cattleguards, troughs, wells, pipelines, seeding or vegetation manipulation projects etc.

The following table (Table 5) shows the Allotments within the Project Area their size, kind of livestock authorized and permitted AUMs:

Allotment Name	Total Acres of BLM	Kind	Total AUMs
Dry Creek	149,225	Horse, Cattle	5,702
Fish Creek Ranch	287,984	Sheep, Cattle	4,815
Francisco	16,896	Cattle	1,369
Grass Valley	282,854	Horse, Cattle	17,701
Hunts Canyon	93,558	Cattle	2,237
Millett Ranch	797	Cattle	72
Mount Airy	80,093	Cattle, Sheep	3,651
Monte Christo	496,018	Cattle	9,352
Porter Canyon	125,150	Cattle	7,256
Ralston	368,682	not currently permitted	not currently permitted
San Antone	442,555	Cattle	13,505
San Juan	64,988	Cattle, Sheep	9,169
Sand Springs	203,868	Cattle, Sheep	5,727
Smoky	125,247	Cattle	5,523
South Smith Creek	149,857	Horse, Cattle, Sheep	5,331
Trail Canyon	24,298	Cattle	581
Wildcat Canyon	65,658	Cattle	2,677

Table 5. Grazing allotments within the Lease Area.



United States Department Of The Interior

Bureau of Land Management
Tonopah Field Office
1553 S. Main Street/P.O. Box 911
Tonopah, NV 89049

Projection: UTM NAD 83, Zone 11N
Map Date: December 2, 2013

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Battle Mountain District July 2014 Oil and Gas Sale Offered & Deferred Parcels: Grazing Alottments

Legend

- Grazing Allotments
- Offered Parcels
- Deferred Parcels
- Cities & Towns
- Mount Lewis Field Office
- Tonopah Field Office
- District Boundary

Agency

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Forest Service
- Fish and Wildlife Service
- Private

Figure 3 - Grazing Allotments in the Lease Area

DOI-BLM-NV-B000-2014-0001-EA

Environmental Consequences

There would be no direct impacts from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. However, it is reasonably foreseeable that oil and gas exploration and development would occur within the next 10 years. Direct impacts from these activities would be analyzed under separate site-specific EAs.

If exploration and/or production activities were permitted activities such as: cross country travel, pipeline construction, road construction and drill pad construction would impact rangeland resources. The removal of vegetation would temporarily decrease the amount of available forage for wildlife, livestock, wild horses and burros. This may reduce the AUM amount available, thus decreasing the amount of livestock or the time that livestock could forage within the allotment. The potential decrease in livestock would coincide with the area of disturbance. These areas of disturbance are expected to be temporary and small in size. Exploration activities could also have a temporary effect on grazing patterns by shifting and/or intensifying livestock grazing in other areas. While in production, wells and other associated equipment may need to be fenced and/or require restricted access. If BMPs are applied the size and intensity of disturbance generated by oil and gas exploration and production could be minimized. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.12 Lands and Realty

Affected Environment

All of the proposed lease parcels are located on public lands with federally controlled surface and subsurface mineral estate. Many of the parcels would require a right-of-way (ROW) in order to access the lease parcels. Some parcels include pre-existing land use authorizations such as grants, leases, permits and withdrawals. Table 6 provides a summary of the land use authorizations in the lease area.

ROW Case File	ROW Holder	ROW Description	Affected Lease Parcel
N-088866	Sierra Pacific Power Co.	25-foot wide powerline	001, 002, 004, & 005
N-089652	Nye County	100-foot wide road in Sections	001, 002, 004, & 005
N-090166	Nye County	Varied width road	005, 006, 007, & 008,
NVCC-018394	NDOT	400-foot wide ROW	010, 011, 015, 017, & 019
N-073706	NV Bell	20-foot fiber optic line	010, 011, 015, 017, & 019
N-004225	NDOT	Mineral Material Site	010
NVCC-020911	NDOT	Mineral Material Site	010
N-033242	Sierra Pacific Power Co.	75-foot wide powerline	010, 015, 019, & 020
Nev-043264	Sierra Pacific Power Co.	100-foot wide powerline	011, 012, 015, 017, 019, 020, 047, 055, 056, & 059
NVCC 018376	NDOT	Mineral Material Site	011
NVCC 020909	NDOT	Mineral Material Site	011
NVCC 020910	NDOT	Mineral Material Site	011
N-056304	FHWA	60-ft access road	012
N-089652	Nye County	100-foot wide road	013, 016, & 017
N-040053	USGS	Monitor Well	013
Nev-060306	NDOT	Mineral Material Site	017
NVCC-020912	NDOT	Mineral Material Site	017, & 019

ROW Case File	ROW Holder	ROW Description	Affected Lease Parcel
N-40054	USGS	Monitoring Well	021
N-11441	Sierra Pacific Power Co.	25-foot distribution line	023, 025, 103, & 107
NVCC-021379A	NDOT	400-ft ROW	023, 024, 025, & 104
N-59009	Lander County	Access road for comm Site	024, 025, & 028
NVCC-018101A	NDOT	400-foot road ROW	024, & 025
N-023392	NDOT	Mineral Material Site	025
N-079989	UNAVCO Inc.	Plate Observatory Site	025
N-000292	Teleford	50-foot irrigation ditch	27
Nev 055173	Truckee River Ranch, LLC	100-foot ROW for ditches	031, 032, 034, & 035
N-055853	Truckee River Ranch, LLC	100-foot ROW for ditches	033
N-077508	NV Bell	20-foot fiber optic line	040, 103, & 104
N-007189	NV Bell	10-foot wide ROW	040, & 104
NVCC-020778	NDOT	400-foot wide road ROW	050, 052, 054, 057, 058, & 073
N-025341	Sierra Pacific Power Co.	140-foot wide powerline ROW	050, 055, 056, 059, 060, 122, 123, 128, 131, 132, 134, 146, 147, 148, 149, & 150
N-075838	Robert Beck	30-foot access road	051
Nev 063690	Sierra Pacific Power Co.	30-foot wide powerline	051
N-083122	Nye County Public Works	Water facility	051
NVCC-024751	Sierra Pacific Power Co.	40-foot wide powerline	055, 056, & 059
N-052585	Round Mountain Gold	16-foot wide access road	055, 056, & 059
N-040047	USGS	Monitoring Well	057
N-039891	Carver	Irrigation Ditch	060
N-009123	Round Mountain Gold	100-foot wide water pipeline	063
N-045089	Round Mountain Gold	100-foot well field pipeline	063
N-045228	Sierra Pacific Power Co.	25-foot distribution line	063
N-092242	Sierra Pacific Power Co.	25-foot distribution line	063
Nev 005149	Berg	100-foot water pipeline & irrigation facility	069
N-039908	NV Bell	10-foot telephone line	069, 083, 088, 093, 097, & 098
N-063200	NV Bell	20-foot fiber optic line	069, 098
NVCC-022622	NDOT	400-foot road ROW	069, 083, 088, 091, 093, & 098
Nev 064717	Sierra Pacific Power Co.	30-foot Distribution line	073
N-041911	Stonier	60-foot access road	073
N-037345	NV Bell	10-foot telephone line	073
N-047382	Nye County	access road	073
N-056922	Truckee River Ranch, LLC	varied width ditches and canals	079, & 080
N-046509	Sierra Pacific Power Co.	25-foot distribution line	079, 080, 093, & 095
N-063200	NV Bell	20-foot fiber optic line	079, 080, 083, 093, 095, & 097
N-053344	Truckee River Ranch, LLC	varied width ditches and canals	079, & 083
N-088358	Truckee River Ranch, LLC	10-ft wide distribution line	079
Nev 065085	Sierra Pacific Power Co.	30-foot distribution line	082, 086, & 087
NVCC 022617	NDOT	Mineral material site and access road	083

ROW Case File	ROW Holder	ROW Description	Affected Lease Parcel
N-040044	USGS	Monitoring Well	083
N-046508	Nye County	25-foot road	091
NVCC-022618	NDOT	Mineral Material Site	091
Nev 045227	Potiker	Irrigation ditch	091
N-006971	USFS	Northumberland road #20023	097, 099, 139, 141, 150
N-007260	Twist Ranch	Comm. Site, canal and ditch	097
N-048679	Sierra Pacific Power Co.	25-foot distribution line	097, 098
N-054886	NV Bell	Smoky Joe's comm. Site	097
N-056103	Sierra Pacific Power Co.	10-foot distribution line	Parcel 097
N-041922	Lander County	30-foot overhead powerline	Parcel 103
N-043918	Sierra Pacific Power Co.	10-foot distribution line	Parcel 107, 108
N-078094	Nye County	200-foot access road	Parcel 113, 114
N-089651	Nye County	100-foot access road	Parcel 113, 114
N-084077	Town of Round Mountain	Access 30-foot road	Parcel 120, 131
N-088024	Pickens	21-foot access road	Parcel 124
N-084473	Nye County Public Works	80-foot access road	Parcel 130
N-040045	USGS	Monitor Well	Parcel 130
N-042425	USFS	14-foot access road	Parcel 132
N-086797	Fattarsi	30-foot access road	Parcel 135
N-058903	Wichman	24-foot access road	Parcel 135
N-039525	USGS	Monitoring Well	Parcel 147
N-077437	Gardner	30-foot water pipeline	Parcel 152
N-017788	McKay	ditch, canal and water pipeline	Parcel 160

Table 6. A summary of the Rights-of-Way (ROWs) in the Lease Area.

Additionally, grants, leases and permits may be authorized prior to any proposals for exploration by an oil and gas lessee. In these instances, the holder of land use authorization would have a valid existing right to the authorized use of public lands within the lease.

Environmental Consequences

Leasing creates a valid existing right, which could conflict with other existing or future land use authorizations. These conflicts would be mitigated through agreements between relevant operators.

Applications for ROW's may be required for roads for oil and gas exploration and production activities. These off-lease ROW's would be non-exclusive where possible, that is, they can be used by the general public for other purposes such as access to public lands.

Impacts to existing ROW's may occur as a result of disturbance activities such as road construction. These impacts may cause temporary disruptions to ROW holders, but the Federal Land Policy and Management Act (FLPMA) requires that prior existing rights must be recognized. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.13 Visual Resources

Affected Environment

BLM Manual Series 8400 outlines the visual resource management (VRM) program. The BLM assigns VRM classes to public lands through the land use planning process. Lands are assigned a class ranging from one to four, with one containing the highest visual values and four containing the lowest values. Attempts are made to mitigate visual contrasts from surface-disturbing activities regardless of the VRM class assigned. The nominated parcels have six parcels classified as Class III and the remaining parcels are Class IV.

Environmental Consequences

No impacts to visual resources on public lands would occur as a result of the oil and gas lease sale. The purchase of a parcel does not guarantee that a parcel will be developed for oil and gas resources in the future. However, if parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COA for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

If an APD is received for a purchased parcel, subsequent NEPA would be required in order to analyze site-specific impacts to visual resources on public lands. Potential impacts may include, but are not limited to: contrast of line, shape, color, or texture due to the emplacement of roads, drill pads, drill rigs, tank batteries, temporary and long-term facilities and pump jacks.

Potential methods to reduce impacts to visual resources on public lands include, but are not limited to: moving drill site locations up to 200 meters, use of low profile tanks, coloring facilities and equipment, road alignment, reducing the size or changing the configuration of drill pads and utilizing topographic features to visually screen facilities. At the conclusion of activities related to oil and gas development, reclamation of the drill site would be required. Potential reclamation may include, but is not limited to: re-contouring drill pads, reclaiming roads, re-seeding drill sites and roads and the removal of equipment and facilities related to oil and gas development.

The utilization of the outlined mitigation and reclamation methods, as well as any others identified at the APD stage, have the potential to minimize impacts to visual resources on public lands to the greatest extent practicable.

3.4.14 Recreation

Affected Environment

The proposed lease parcels are all within dispersed recreation areas subject to public use. Dispersed recreation areas are areas that are used by recreationists as they desire. Activities including sightseeing, pleasure driving, rock collecting, photography, hunting four-wheeling, hiking and bird watching occur in dispersed recreation areas. The lease area is used by the public for camping, hunting, hiking and other outdoor recreation activities.

Environmental Consequences

During the exploration phase, survey and drilling crews are likely to use available access roads and trails in the District that are also used for recreation access. The survey activities conducted during the exploration phase are likely to minimally impact recreation, if at all, due to the short

duration, small crew size and temporal nature of the surveys and drilling of wells as well as the dispersed nature of recreation activities in these areas. However, if parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

Exploration of the leases would include construction activities. At this time, access roads and well pads are constructed. Increased truck traffic during this phase could affect recreation due to increased noise and dust levels and could cause temporary delays or closures on access roads. Construction sites are likely to have limited access to the public which could, in turn, slightly decrease access to the area for recreation.

The production stage includes operation and maintenance of the constructed facilities. These activities require a small number of employees who would utilize access roads in the area but are not likely to limit the recreational use of these roads. Oil and gas production facilities are likely to have limited access to the public; however, improved access to the area for recreation may be available because of the maintained access road to the production facility.

3.4.15 Socioeconomics

Affected Environment

The lease parcels are located within three counties in Central Nevada: Nye County, Esmeralda County and Lander County. The primary economic activities that contribute to the economic base for lands within the lease area are mining, agriculture and recreation. All three counties offer rural lifestyles with less than 3 persons per square mile.

Nye County

The majority of the proposed lease parcels are located within Nye County. Nye County's total population, according to the 2010 Census, is approximately 43,946 with a population density of 2.4 persons per square mile. The median household income is $39,150 with 20.1 percent of the population living below the poverty level.

Esmeralda County

Esmeralda County's total population, according to the 2010 Census, is approximately 783 with a population density of 0.2 persons per square mile. The median household income is $27,500 with 24.2 percent of the population living below the poverty level.

Lander County

Lander County's total population, according to the 2010 Census, is approximately 5,775 with a population density of 1.1 persons per square mile. The median household income is $70,341 with only 11.8 percent of the population living below the poverty level.

Environmental Consequences

The only direct effect of issuing new oil and gas leases on socioeconomics within the assessment area would be the generation of revenue from the sale of the leases as the State of Nevada retains 50 percent of the proceeds from lease sales.

Subsequent oil and gas exploration, development and production could create impacts to the county economy in terms of additional jobs, income and tax revenues.

During the exploration phase, oil and gas companies typically provide in-house scientists and technicians to do the majority of this work. After initial surveys have been completed, road building and drill pad construction could occur as a result of oil and gas exploration and development activities. Road and drill pad construction could be contracted to local contractors. Wells would typically be drilled over a period of time and not at the same time. The exploration crews, ranging from 20 to 30 people, would spend portion of their salary in the local community for the duration of the project (four to eight weeks). The indirect impacts to socioeconomics within the assessment area from the proposed action based on above scenario would be minimal.

During development and production phase, the potential for socioeconomic impacts within the assessment area would be greater. More permanent roads and drill pads would be constructed, along with associated support facilities and transmission lines. Typically, the majority of this work is supplied by local contractors. Additionally, local businesses may realize increased revenue from the purchase of supplies, meals, rooms, etc. Local trucking and delivery companies may also benefit economically by transporting supplies, building materials and oil products. Oil production from federal lands is subject to a 12.5 percent royalty payment to the federal government. Fifty percent of that amount is provided to the state government which then provides a portion back to the counties.

If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COA for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

3.4.16 Wild Horse and Burro

Affected Environment

The Battle Mountain District administers 28 Herd Management Areas (HMAs) encompassing approximately 3.6 million acres of public land. Two other HMAs within the district boundary are administered by adjoining Districts. The BMD also cooperatively manage several USFS Wild Horse Territories (WHTs). The estimated BMD population as of January 1, 2014 is approximately 4,600 wild horses and 360 wild burros.

HMAs are areas identified in Land Use Planning for long term management of wild horses or burros and are designated “Special Management Areas”. Many HMAs encompass mountain ranges and include mountain browse, meadow, mahogany and pinyon and juniper vegetation types interspersed with perennial streams and springs. Wild horses and burros also use sparsely vegetated, rocky terrain and habitat with limited water. Winter habitat typically consists of valley bottoms and lower elevations that may support winterfat or other salt desert shrub vegetation. The primary vegetation types used by wild horses consist of Wyoming or Mountain big sagebrush with an understory of perennial grass. Wild burros are able to thrive in more desert type conditions than wild horses. Wild horse and burro populations generally move throughout or between HMAs in response to a number of factors.

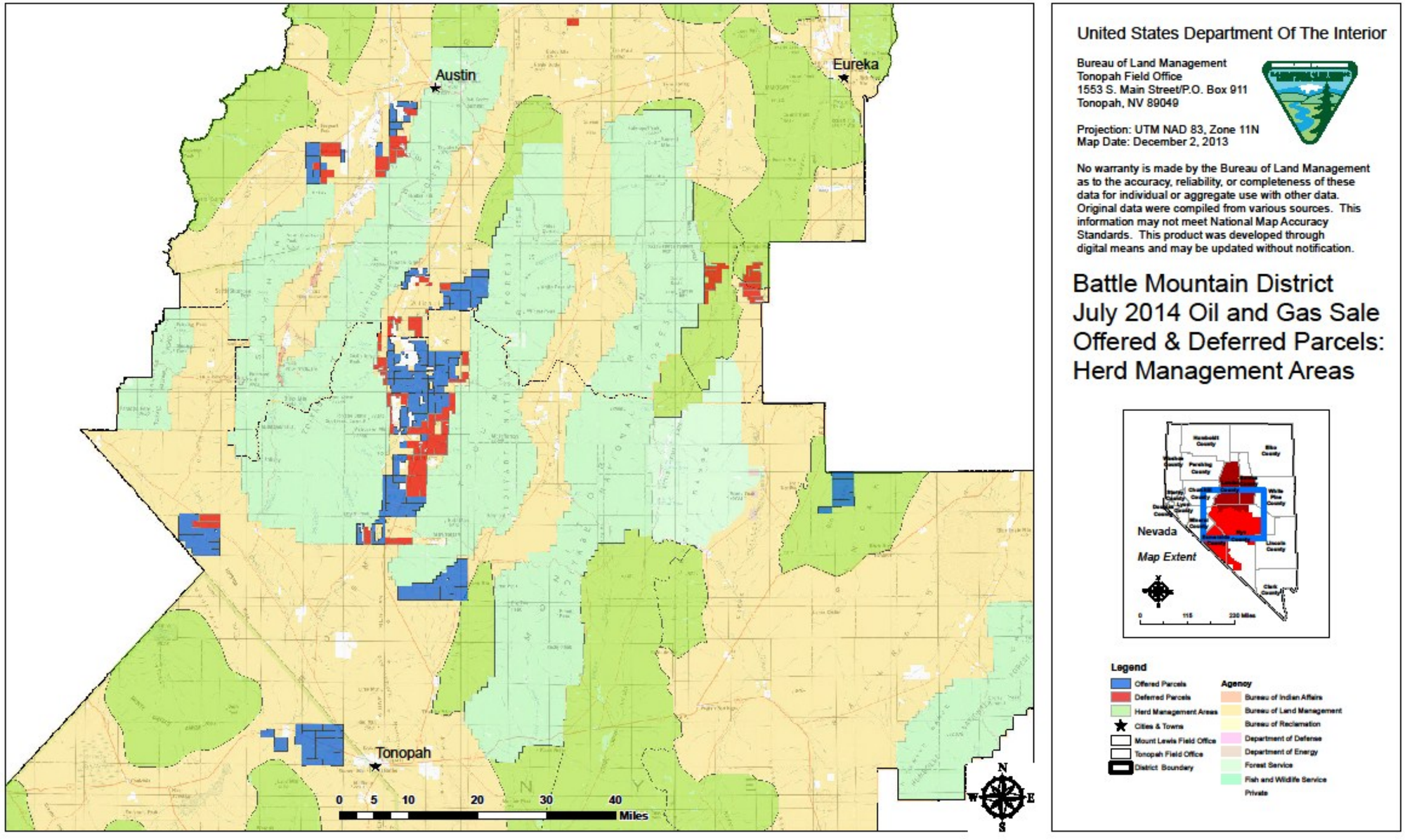
Wild horse and burro distribution throughout HMAs varies greatly throughout the year and is influenced by forage and water availability, precipitation, temperature, snowfall and other climatic factors, population size and resulting animal density (competition) and human disturbance caused from OHV use, roads, mining, exploration, recreation and other uses that occur on the public lands.

Water availability is a key influence to wild horse use and movement patterns, especially during summer months. Wild horses will generally travel much farther to water than will livestock. In many HMAs water sources are plentiful and supplied by perennial streams, springs and human constructed water developments such as livestock water tanks and ponds. In other cases, water sources are limiting and in drought years, wild horses may have difficulty accessing sufficient water, especially if the population exceeds the Appropriate Management Level (AML). In these cases, wild horse distribution is closely tied to the location of the available waters, which become very important to the health of the herd.

The average HMA population managed by the BMD is approximately 200 wild horses, with the average HMA size 114,300 acres. In some cases, wild horses do not fully utilize the entire HMA due to forage availability, water shortages, or human disturbance. Movement of wild horses between HMAs occurs where HMA boundaries are contiguous or near each other and when fences do not impede the interchange.

Management of wild horses and burros involves periodic inventory activities, typically completed with helicopter, as well as on the ground monitoring of habitat, animal health and distribution. The majority of wild horse foals are born between March 1 and July 1 annually. Burro populations may foal year round and may not increase at the same levels as wild horses. Throughout the BMD, populations increase by 10-22% annually. Appropriate Management Levels have been established for all HMAs administered by the BMD. When inventory and other data indicate that the AMLs have been exceeded, gathers are planned to reduce the populations within HMAs to the AML in order to prevent deterioration of the range associated with an overpopulation of wild horses or burros.

The Bureau of Land Management is responsible for the protection, management and control of wild horses and burros on public lands in accordance with the Wild Free-Roaming Horse and Burro Act of 1971 as amended (Public Law 92-195 Act) which states that BLM “shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.”



United States Department Of The Interior

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Projection: UTM NAD 83, Zone 11N
Map Date: December 2, 2013

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Battle Mountain District July 2014 Oil and Gas Sale Offered & Deferred Parcels: Herd Management Areas

Legend

- Offered Parcels
- Deferred Parcels
- Herd Management Areas
- Cities & Towns
- Mount Lewis Field Office
- Tonopah Field Office
- District Boundary

Agency

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Forest Service
- Fish and Wildlife Service
- Private

Figure 5 - Herd Managment Areas in the Lease Area

DOI-BLM-NV-B000-2014-0001-EA

Sand Springs West HMA

The Sand Springs West HMA covers 152,927 acres 80 miles North East of Tonopah, Nevada in Nye County. The HMA is located in the Big Sand Springs Valley and the Pancake Range on the North Side of US highway 6. Elevation ranges from a low of 5156 ft to a high of 8153 ft.

The Sand Springs West HMA is bordered by the Pancake HMA in the Ely District. Horses are known to move between these two HMA's on a regular basis. The AML for the HMA is 49 horses. Current population estimates are near 120 horses.

Figure 5 shows Herd Management Areas and the proposed Lease Sale Parcels, as well as, the deferred Parcels. Within the central portion of the Sand Springs West HMA, six parcels wholly exist as shown in the following table:

Parcel Number	Acres
NV 14-07-161	2078
NV 14-07-162	2081
NV 14-07-163	2082
NV 14-07-164	2085
NV 14-07-165	2084
NV 14-07-166	1278

Table 7. Sand Springs HMA Parcels

Though there are no springs within any of these parcels, there are three waters in the area, Needles Catch Basin, Etcheverian Well and Sand Springs Well. Horses will be seen traveling to and from these waters. The Sand Springs Wash runs through the middle of parcel NV 14-07-166 and alongside the other parcels. This wash may have water in the spring or after heavy rains which may draw horses to the area.

Most of the area in this HMA is dominated by Wyoming or mountain big sagebrush with some perennial grass understory.

Saulsbury HMA

The Saulsbury HMA is approximately 20 east of Tonopah NV in Nye County and covers 135,977 acres. The HMA is divided into two sections, North and South, by US Forest Service land. The north section is located in the northeast portion of Ralston Valley and covers 73,795 acres. It is bordered on the west by State highways 376 and 82. The east side borders USFS land and the Monitor Wild Horse Territory. Elevations range from 5620 ft to 8172 m.

Horses are known to move back and forth between the Monitor WHT and Saulsbury HMA. The AML for the Saulsbury north is 30 horses. The estimated population for the entire HMA is 174 horses.

Figure 5 shows Herd Management Areas and the proposed Lease Sale Parcels, as well as, the deferred Parcels. Within the northwestern portion of the Saulsbury HMA, one parcel exists as shown in the following table:

Parcel Number	Acres
NV 14-07-114	2584 total/358 inside HMA

Table 8. Saulsbury HMA Parcel

358 Acres or 13.8% of Parcel NV14-07-114 are within the HMA boundary.

Though there are no springs within any of these parcels, there is one water in the area- Spanish Pipeline Well. This well is on the outside of the HMA boundary and across a fence. Horses are not expected to use this water. There is a wash that runs through parcel NV 14-07-114. This wash may have water in the spring or after heavy rains which may draw horses to the area. The entire area in the HMA that this parcel covers is a winterfat valley bottom.

Environmental Consequences

Direct Impacts

Direct impacts to wild horses or burros would not occur due to oil and gas leasing. Indirect and cumulative impacts would result from exploration activities, well drilling and development/production. Should exploration or development be proposed within these leased areas, additional, site specific NEPA analysis would be completed to assess the potential impacts to wild horses and their habitat in these areas.

Indirect Impacts

The primary indirect impacts would include the influence to herd distribution and movement patterns throughout the HMAs and disturbance to the forage resource.

Mining exploration activities are common throughout the BMD and oil and gas exploration activities would produce similar impacts to wild horses and burros. Direct impacts to wild horses could include disturbance due to increase human activity. These impacts would likely be short term in nature and would consist of wild horses moving out of the area or changing movement patterns. The degree of disturbance to wild horses would be equivalent to the levels of exploration/development and increased activity in the area. Disturbance would cease with the completion of exploration efforts.

Localized and small scale vegetation disturbance could occur due to seismic testing, road construction, overland travel and drill pad construction, which would have an overall minimal impact to the forage available within the HMA. Per the RFD Scenario described in Section 2.4, it is highly unlikely that large amounts of disturbance would occur within the six parcels identified for lease within wild horse HMAs. Additionally, due to the location within the HMAs, any future exploration or development would be expected to have minimal impacts to wild horses in these areas. However, if parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

The impacts to wild horse distribution, movement patterns and long term genetic health from future production/development would also be congruent upon the size and location of such operations, in relation to water sources and wild horse movement passageways.

Wild horses that commonly utilize a particular area that is subsequently developed for oil or gas production would be pressured to move from that portion of the HMA and no longer use it. Increased vehicle traffic, road construction and human presence could cause the wild horses to use the developed area less and use other areas within the HMA more. This could result in impacts to the other areas within the HMA if increased use causes damage to the vegetation through increased utilization of forage resources and water sources.

The BLM is mandated to manage wild horses and burros only within those areas where they were found at the time the WFRHBA was passed in 1971. Wild horses and burros cannot be relocated somewhere else within the District and new HMAs cannot be created for them. Nor is BLM allowed to expand the HMAs beyond d the 1971 Herd Area boundaries to replace habitat lost.

3.4.17 Forestry and Woodland Products

Affected Environment

The lease area contains mountains, alluvial fans, foothills and riparian zones which support unique varieties of woodland and forest tree species. These include quaking aspen, curlleaf mountain mahogany, single-leaf pinyon pine, Utah juniper, narrow-leaf cottonwood, black cottonwood, Fremont cottonwood and willow (*Salix* spp.).

Quaking Aspen

Populus tremuloides, commonly known as Quaking aspen is a rather short-lived (i.e., 100 to 150 years) deciduous, hardwood belonging to the *Salicaceae* (willow) family. It is typically found in monotypic stands with mature trees reaching heights of greater than 60 feet. Nationally, it has the widest distribution of any native tree species. Due to its unique biological characteristics and rarity, the harvesting of both live and dead aspen is prohibited throughout all parcels. Quaking aspen communities are represented in approximately 1331 acres in the Battle Mountain District (Brieland and Tueller 2003). However, these vegetative communities are important since they comprise the highest ecological biodiversity of plants and animals found in the Assessment Area. They are also major indicators of upper watershed health since they naturally grow and thrive only in, or adjacent to riparian zones that contain adequate surface water and quality (streams and springs) or high water tables.

Curlleaf Mountain Mahogany

Cercocarpus ledifolius, commonly known as the Curlleaf mountain mahogany is not extensive in the Assessment Area. However, some of the largest communities exist in the Antelope Range. Curlleaf mountain mahogany is a long-lived (i.e., greater than 500 years) evergreen hardwood associated with other higher-elevation tree species such as limber pine. It can exist in pure stands and reach heights of greater than 25 feet. It grows best in a zone between 7,000 and 10,000 feet and is an important browse species for mule deer, especially in the winter months. Due to the relative scarcity of mahogany throughout the district, only a limited number of deadwood only harvesting permits are allowed each year.

Pinyon Pine and Juniper

Pinus monophylla or singleleaf Pinyon pine is a relatively long-lived evergreen softwood

(500 to 800 years), belonging to the *Pinaceae* family. The conifer grows best at elevations between 4,500 and 9,000 feet, on higher alluvial fans, foothills and mountain slopes. It is a comparatively short tree, reaching maximum heights of 40 feet.

Prehistorically, the pine nuts of the pinyon were used as a major source of food by ancient native cultures such as the Anasazi. Today, the nuts are harvested by the general public and are spiritually revered by Native Americans such as the Paiute and Shoshone. Commercial harvests of pinyon nuts have been conducted on the Assessment Area when production levels have been adequate. Production is cyclical, depending on a number of complex factors such as moisture and temperature. Pine nuts are also a very important food source for smaller mammals, rodents and birds such as the scrub jay and Clark's nutcracker.

Some other current uses of pinyon are for fuel wood and Christmas trees. The BMD sells hundreds of permits every year, including commercial harvest contracts.

Juniperous osteosperma or Utah Juniper is a long-lived (greater than 2,000 years) evergreen softwood belonging to the *Cupressaceae* family. The tree can be found in pure stands or mixed with pinyon pine at elevations ranging from as low as 4,000 feet up to approximately 8,000 feet. Like its associate, the pinyon, juniper is a rather short tree reaching heights of approximately 30 feet. The tree is well distributed throughout the Great Basin and the Assessment Area on alluvial fans, foothills and mountain slopes. During the settlement of the west, juniper was used extensively for building structures, fence posts, fuel wood for cooking and heating and the production of charcoal for mining operations. In the Assessment Area, the wood is utilized only for fuel wood and fence posts. As with pinyon pine, there are currently no accurate inventories of actual juniper acreages in the Assessment Area.

Field observations over the last few years have revealed widespread mortality in pinyon/juniper stands. The majority of this mortality is associated with increases in bark beetle activity and is exacerbated by drought and resource competition.

Cottonwood

Cottonwoods (*Populus spp.)* are deciduous hardwood poplars belonging to the willow family. They are found naturally in riparian areas along stream banks, on the periphery of springs and ponds and planted in agricultural areas within the lease area. These native cottonwoods rapidly grow to heights of greater than 80 feet, with girths up to five feet and are relatively short-lived (i.e., 150 years). Unlike their aspen cousins, they can regenerate both from sprouting and seed. These species can also be propagated by transplanting suckers or small limbs. Currently, the BMD protects the trees from any type of harvesting, including deadwood.

Willow

Willows (*Salix spp.)* are hardwood members of the *Salicaceae* family with deciduous foliage and affinities for riparian habitats with high water tables. Ranging in height from ten to 40 feet, there are more individual species of willow than any other hardwood found in the Assessment Area. Like their poplar relatives, they require relatively large, consistent amounts of water to

thrive and regenerate. They are not legally harvested in the Battle Mountain District. In the Assessment Area, willows can be found in monotypic communities or associated with other riparian vegetation such as sedge, rush and poplars.

Environmental Consequences

Impacts associated with exploration, development and production could have impacts on forest resources including shrubs, trees and riparian vegetation (e.g., aspen, cottonwoods, willows). Oil and gas exploration would utilize off-road vehicles and equipment for exploration. This equipment could include four-wheel drive trucks as well as larger and heavier wheeled vehicles. Damage to forest and woodland species such as pinyon pine, juniper and riparian types such as quaking aspen, cottonwood and willow could result from the contact of such equipment with individual plants.

Based on the history of oil and gas exploration in the BMD, it is likely that the majority of exploration and development efforts would be focused on the lower elevation alluvial fans and playas. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

4.0 CUMULATIVE IMPACTS ANALYSIS

The Proposed Action has been examined for cumulative effects to the project area and the surroundings. Cumulative impacts are those effects on resources within an area or region caused by a combination of past, present and reasonable foreseeable future actions (RFFA's). These impacts may be individually minor but added together over time may become significant (40 CFR 1508.7).

The cumulative effect study area (CESA) for this environmental assessment encompasses the entire Battle Mountain District (Figure 3). Oil and gas leases are leased for a 10-year time period; therefore, the same timeframe was selected for the cumulative effect study analysis.

4.1 *Past and Present Actions*

Most of the oil and gas exploration and development conducted in the BMD has occurred in the Tonopah Field Office (TFO) area. Nye County was the location of the first producing oil well in Nevada. Shell's Eagle Springs # 1-35 well was discovered in 1954. The Eagle Springs discovery well attracted major oil companies to explore several of eastern Nevada's valleys which produced encouraging shows, but no discoveries. The Trap Springs field was discovered in 1976 by Northwest Exploration. The most prolific oil field in Nevada was discovered in 1983, when Northwest Exploration Grant Canyon No. 1 was drilled and completed. Grant Canyon No. 1 was the most prolific onshore oil well in the continental United States, flowing up to 4,300 barrels of oil per day. The most recent oil field discovered was Sans Spring, in 1993.

Land-use authorization; like new road, powerline and pipeline ROW's and renewal of existing ROW's associated with oil and gas production and grazing can be expected in the future.

Historical Oil & Gas lease sales have included hundreds of parcels in the CESA where expressions of interest were submitted by prospective lessees. Between 20 and 50 percent of the parcels have typically been sold during and the day after the lease sales. There are currently 32 are oil producing leases within the BMD. Since 2001, there have been 14 oil and gas well permits issued in the CESA. BMDO typically authorizes fewer than 4 APD's per year and 1-2 geophysical exploration permits every decade, most of which are in Nye County.

The oil and gas program consist mainly of speculative leasing and the drilling of wildcat wells in and around existing oil fields in the Railroad Valley. Three wildcat wells have been drilled since 2009. All have been plugged and abandoned.

Livestock grazing has been authorized in the past and is currently authorized. In the CESA there are approximately 10.5 million acres of land under 94 grazing allotments.

4.2 Reasonably Foreseeable Future Actions (RFFA's)

The Proposed Action does not include exploration, development, production, or final reclamation of oil and gas resources; however, authorization of oil and gas leasing does convey a right to subsequent exploration and production activities. These later activities are associated with oil and gas leasing; therefore, they are analyzed as part of the Proposed Action.

As noted in the Draft Tonopah Resource Management Plan and Environmental Impact Statement (June, 1993), the extremely complex geologic structure of the area has limited the success rate of wells to approximately 28 percent. Within the defined oil fields the success rate is approximately 60 percent. The 2006 *Environmental Assessment for Oil and Gas Leasing Within Portions of the Shoshone-Eureka Planning Area* outlined minimal Oil and Gas activity within the respective planning area. Other than mineral exploration and development oil and gas leasing, exploration, development and production from any future drilling programs and the continuation of highly dispersed recreation and grazing, there are no future actions anticipated in this area.

Reasonable Foreseeable Future Actions resulting from the proposed and similar future actions include; yearly competitive oil and gas lease sales; exploration activities that might lead to development and production; grazing; dispersed recreation, mineral exploration and development; geothermal exploration and development; gravel pit development; communication site construction; noxious weed treatment; wildland-urban interface activities; and associated land-use authorizations.

4.3 Cumulative Impacts from Past, Present and Reasonably Foreseeable Future Actions

The RMP projections for oil and gas exploration and development in the planning area (see p. 6 of this EA) appear to have been somewhat overestimated; however, modest amounts of oil and gas exploration are expected to continue in the BMD over the next ten years even with the current technological advances in HF. Geophysical surveys may be conducted prior to any exploratory drilling. Surface disturbance associated with geophysical surveys are usually minimal. An APD may then be submitted for a wildcat well in the CESA, or a production well

within an existing field. A site specific NEPA document would be prepared prior to approval of any application to conduct surface disturbing activities.

There is a small chance that a new oil field will be discovered within the next 10 years. The most recently discovered new oil field, Sans Spring, was discovered in 1993. If another oil field were discovered, there would, in all likelihood, be additional disturbance of previously undisturbed lands. An additional 5 to 10 wells may be drilled in the vicinity of any new discovery and up to 30 acres of disturbance might be expected within the CESA boundary. The surface disturbance associated with a producing well would probably remain for the entire production life of the well. Surface disturbance associated with drilling a dry well would be reclaimed within a year after the well was plugged and abandoned.

Development wells include step-out or field extension wells, enhanced oil recovery wells, or other infield wells. Even though the drilling of development wells would be adjacent to or actually within areas of current production, it may require disturbance on previously undisturbed lands.

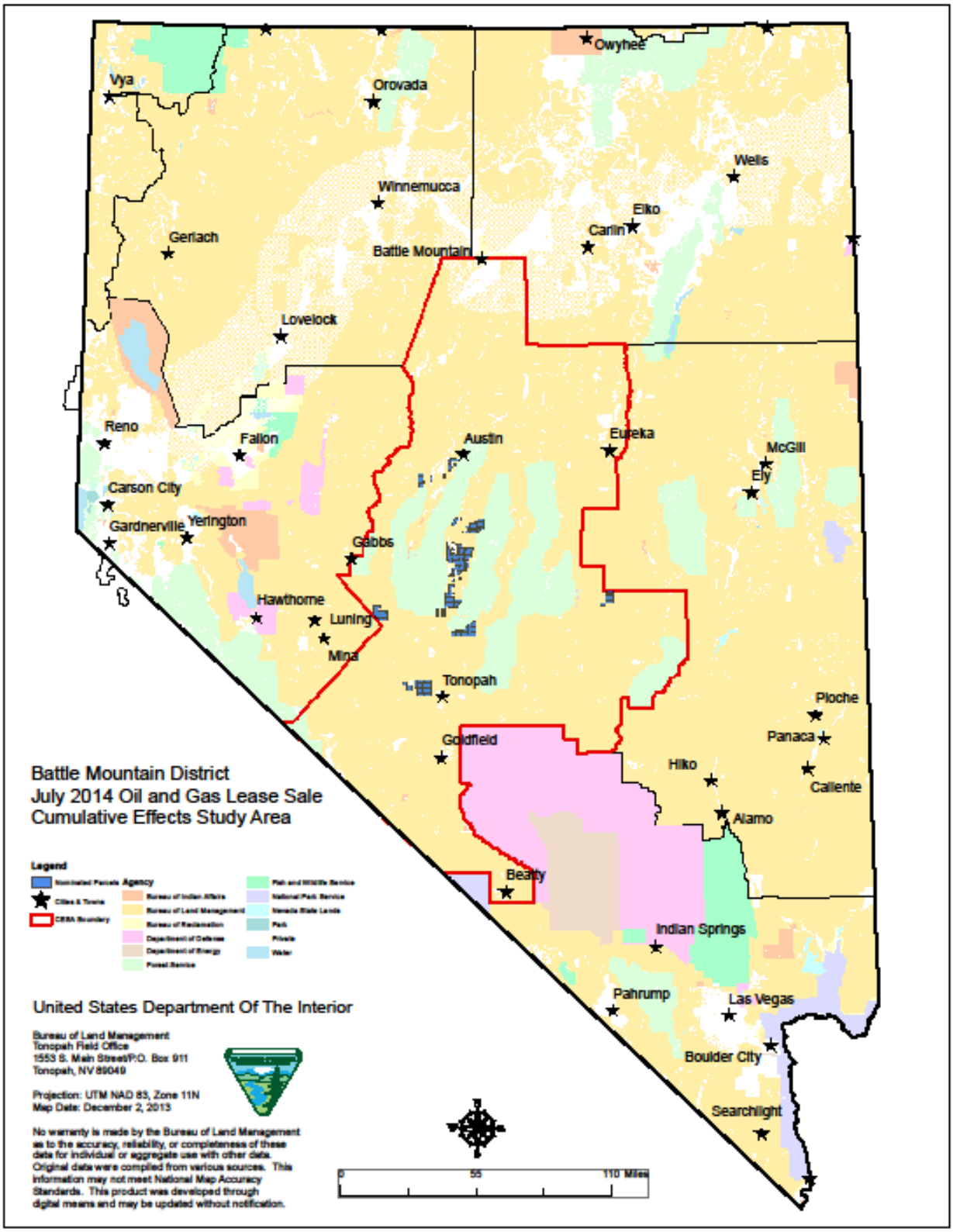

Figure 4 - Cumulative Effects Study Area

Based on past actions there will be approximately 15 oil and gas wells permitted by the TFO within the next 10 years and much less than that in the MLFO. Approximately 60 percent of the wells projected to be drilled would be development wells (as opposed to wildcat exploratory wells). An estimated 10-20 percent of the development wells would produce economic quantities of oil, while the remainder would be unsuccessful and would be plugged and abandoned upon completion of drilling. Well completion techniques, such as HF may enhance the number of production wells. The remaining 40 percent of wells expected to be drilled would be wildcat wells – all are expected to be dry and would be plugged and abandoned, with reclamation being completed within one year of being abandoned.

4.3.1 Cumulative Impacts on Air Quality

Past, continued, proposed and foreseeable road, power line and pipeline construction, minerals exploration and recreation all create air quality impacts. Increased volumes of carbon dioxide, carbon monoxide and particulates have been and would be caused by vehicle exhaust, disturbing the soil cover from additional travel on existing dirt roads and the construction of new access roads and well pads and additional drilling.

Geophysical exploration has in the past and would in the foreseeable future cause very little impact to air quality because the exploration equipment would be in the area for a very short time (typically less than a week) and little or no additional surface disturbance would be created to disturb the soil.

Activities associated with drilling wells typically last less than a month and the potential to increase particulate matter from multiple trips is mitigated by placing gravel on the access roads and protecting the soil. These localized, temporary impacts are not expected to significantly affect air quality in the area or exceed air quality standards.

4.3.2 Cumulative Impacts on Cultural Resources

A number of ongoing and potential actions in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use and livestock grazing could cumulatively impact cultural resources. However, concurrent exploration and production actions would contribute to the cumulative impacts. With implementation of BMPs and the COAs, impacts could be minimized. It is expected that the proposed action may contribute to cumulative impacts, through the reasonably foreseeable role of oil and gas exploration and development. Overall impacts within the project area could be negligible, especially when effectively mitigated.

4.3.3 Cumulative Impacts on Native American Religious Concerns

Fluid mineral leasing and exploration may contribute to the general decline in sites and associated activities of a cultural, traditional and spiritual nature. Presently, impacts to many cultural, traditional, spiritual sites and associated activities have been avoided through Native American consultation efforts. Only the potential impacts to tribal resources were analyzed in this EA because it evaluates the leasing of oil and gas parcels and does not analyze areas of proposed surface disturbance where impacts might be expected. Without a specific surface disturbing activity, location and description, identifying all impacts to specific tribal resources is not possible. As noted previously, for any future development, the BLM would produce a site-

specific EA, which would discuss alternatives or measures that may reduce or eliminate impacts to Native American Religious Concerns.

4.3.4 Cumulative Impacts on Wildlife Resources

Disturbance and fragmentation of wildlife habitat, including oil and gas development, may impact wildlife species by displacement or temporarily and permanently altering habitat. In turn, habitat loss and displacement can have negative impacts on wildlife populations. For example, reduced habitat availability can increase competition particularly if preferred habitats are limited or near carrying capacity. In these cases, an overall reduction in population size is expected, which is of particular concern for small or isolated populations.

A number of other ongoing projects and future activities in the Lease Area, such as locatable mineral exploration, off-highway vehicle use and livestock grazing could cumulatively impact wildlife. These activities could result in loss of habitat, habitat fragmentation and disruption of movement patterns. It is expected that the proposed action may contribute to cumulative impacts if exploration and development of the lease parcels is authorized in the future. However, the reasonably foreseeable impacts of oil and gas exploration and development within the assessment area is negligible if potential impacts are effectively minimized through site-specific COAs, BMPs and mitigation measures. In addition, several parcels were deferred that contain important habitat for SSS fish, sage-grouse, mule deer, bighorn sheep, pronghorn antelope and riparian dependent species (Appendix C).

4.3.5 Cumulative Impacts on Water Quality (Surface and Ground) and Quantity

The impacts from the proposed, ongoing and reasonably foreseeable actions will have an incremental effect on any area of the CESA. The effect will be dependent on the area, water usage and water management plan.

4.3.6 Cumulative Impacts on Wastes, Hazardous and Solid

The cumulative impact of hazardous and solid waste generated during the development of authorized, proposed, or reasonably foreseeable actions would be negligible because of mitigation which would be developed during site specific analysis. Additionally, federal and state governments specifically regulate each project to ensure, to the extent possible, that there are no releases of hazardous materials into the environment.

4.3.7 Cumulative Impacts on Noxious Weeds and Invasive, Non-native Species

Continued use by off-highway vehicles and cattle grazing may have contributed to the infestation and spread of noxious weeds and invasive non-native species within the CESA. Overall, the proposed action and possible subsequent exploration and development of oil and gas leases could increase the potential for impacts to existing native plant communities. However, measures taken in accordance with the prevention schedule and BMPs included in the plans of operations for future oil and gas projects would reduce the spread of invasive species. By implementing site specific mitigation measures, the incremental effect from past, present and future activities, would ensure that cumulative impacts to noxious weeds and invasive non-native species would be minimal.

4.3.8 Cumulative Impacts on Geology and Minerals

A number of other ongoing activities such as mining, mineral exploration, geothermal exploration and production, sand and gravel pit development, could cumulatively impact mineral resources within the BMD. These impacts include conflicts between exploration and development of minerals resources and loss of access to mineral resources. However, based on the small scale of expected disturbance from oil and gas-related activities the cumulative impact to minerals and geology is expected to be negligible. Impacts that may exist could be mitigated by negotiations between operators. Sixteen parcels that overlap existing mine boundaries have been deferred to avoid conflicts.

4.3.9 Cumulative Impacts on Soils

A number of ongoing and potential actions in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use and livestock grazing could cumulatively impact soils. These impacts include erosion of soils, disturbance of microbiotic crusts and soil compaction. The proposed action would not likely contribute to cumulative impacts. However, concurrent exploration and production actions would contribute to the cumulative impacts. With implementation of BMPs and the conditions of approval, impacts could be minimized. It is expected that the proposed action may contribute to cumulative impacts, through the reasonably foreseeable role of oil and gas exploration and development. Overall impacts within the project area could be negligible, especially when effectively mitigated.

4.3.10 Cumulative Impacts on Vegetation

A number of ongoing and potential actions in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use and livestock grazing could cumulatively impact vegetation. These impacts include erosion of soils, disturbance of microbiotic crusts, disturbance or removal of vegetation and soil compaction. The proposed action would not likely contribute to cumulative impacts. However, concurrent exploration and production actions would contribute to the cumulative impacts. With implementation of BMPs and the conditions of approval, impacts could be minimized. For example revegetation and rehabilitation in the interim and following projects would mitigate impacts to vegetation. It is expected that the proposed action may contribute to cumulative impacts, through the reasonably foreseeable role of oil and gas exploration and development. Overall impacts within the project area could be negligible, especially when effectively mitigated.

4.3.11 Cumulative Impacts on Range Resources

The disturbance associated with oil and gas exploration and production would add to the disturbances from mining exploration, mining and off-highway vehicle use. The creation of new roads, construction of drill pads and the development of wells and mines removes available forage for wildlife, livestock, wild horses and burros. Reductions of available forage could have an impact on ranching operations. However, the cumulative impacts of the proposed action on range resources are expected to be minimal due to the relatively small area of disturbance, concurrent reclamation and developed site-specific mitigation.

4.3.12 Cumulative Impacts on Land and Realty

Cumulative impacts from past, present and future activities to realty actions within the assessment area are negligible. Site-specific mitigation measures for exploration and development would ensure that the potential cumulative impacts from the proposed action would remain negligible.

4.3.13 Cumulative Impacts on Visual Resources

The cumulative impacts from past, present and future activities as previously outlined, remain low to moderate for visual resources due to the likelihood of large distances between actions and limited surface disturbance. Most of the future activities would be on valley floors. Visual resources are mitigated on a case-by-case basis and many of the activities would be temporary in nature.

Principal existing human-made visual features within the assessment area include several county roads and US highway 6. There are also several gravel and native surface secondary roads, ranches, farms and electrical transmission lines. None of the future activities would create any visual impact inconsistent with the applicable VRM Class ratings for the assessment area, thus the overall cumulative impact would continue to be low to moderate.

4.3.14 Cumulative Impacts on Recreation

Increased commercial developments would increase the population of the area, which would in turn create an increase in all recreational activities such as visits to WSAs, hunting and off-highway vehicle use in the assessment area. Given that many recreational activities are dependent upon a high quality visual/aesthetic environment, commercial developments, including fluid mineral development, has the potential to lower the quality of recreational experiences in the assessment area. However, the mitigation measures developed during site specific analysis in the CESA would ensure the quality of recreational experiences would not be significantly reduced.

4.3.15 Cumulative Impacts on Socioeconomics

The Proposed Action does not: Induce substantial growth or concentration of population, displace a large number of people, cause a substantial reduction in employment, reduce wage and salary earnings, cause a substantial net increase in county expenditures, or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the proposed action, would be beneficial and not significant.

4.3.16 Cumulative Impacts on Wild Horses and Burros

Cumulative impacts to wild horses from oil and gas leasing would consist of the impacts occurring as a result of exploration and production which could occur in lease areas associated with the RFD. The CESA for wild horse and burro management would include the HMAs in which the leases are located as well as those HMAs adjoining the affected HMAs.

Past, present and reasonably foreseeable projects that have and could continue to have impacts to wild horses include mining exploration, geothermal exploration, oil and gas exploration, power

line construction, wild land urban interface activities, wild horse gathers, communication site construction and noxious weed treatment. These activities have the result of isolated and usually limited soil and vegetation disturbance or loss.

Two primary impacts to wild horses were considered that could occur from oil and gas exploration and development – increased fragmentation of wild horse habitat and cumulative increases in vegetation and soil disturbances, which result in incremental losses in availability of quality habitat used for wild horses.

Oil and gas exploration could involve overland travel, road construction, seismic testing and drilling which could cause surface disturbance. Over time, the areas of disturbance would cumulatively increase and impact the quality and quantity of habitat available to wild horses, as well as increase risks for erosion and noxious weed invasion.

Mining activity, oil and gas production, geothermal development, gravel pit expansion, road building, fencing and wild horse gathers, are all activities, which can impact wild horse distribution and seasonal movement throughout and between HMAs. Each activity could result in incremental restrictions to free roaming behavior of wild horses and over time may influence utilization patterns, genetic interchange and use of water sources.

According to the Trends and Projections Scenario described in Section 2.4.2, it is unlikely that large areas of disturbance would occur within the six parcels identified for lease within wild horse HMAs and therefore the effects would be minimal.

Exploration and production activities would be analyzed on a site specific basis. Effects of potential proposed actions to wild horse populations in the HMAs would be analyzed and mitigation measures developed to avoid or reduce impacts, or COAs would be implemented to protect the long term health of wild horses.

4.3.17 Cumulative Impacts on Forestry and Woodland Products

A number of past, present and RFFAs in the area such as mining, mineral and geothermal exploration, off-highway vehicles use and livestock grazing could contribute to cumulative impacts. Based on the RFD, foreseeable impacts could result in the construction of a number of drilling sites, production facilities and transportation corridors. The long-term change in vegetation and associated potential loss of woodland productivity (pinyon-juniper) would not result in substantial impacts since the Assessment Area contains abundant pinyon-juniper woodlands. In addition, it is likely that the majority of exploration and development efforts would be focused on the lower elevation alluvial fans and playas. Based on the RFD and when considering site-specific mitigation measures that would be developed for potential exploration and development, cumulative impacts to forest and woodland resources would be minimal.

5.0 CONSULTATION AND COORDINATION

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Chad Lewis, Mount Lewis Field Office, Fuels Program Manager/District Forester
Joshua Tibbetts, Mount Lewis Field Office, Prescribed Fire/Fuels Specialist
David Jones, Nevada State Office, Air Quality Specialist

5.2 Agencies/Tribes Contacted

Battle Mountain Band
South Fork Band
Duckwater Shoshone Tribe
Yomba Shoshone Tribe
Ely Shoshone Tribe
Timbisha Shoshone Tribe
Fallon Pointe Shoshone Tribe
Nevada Department of Wildlife (NDOW)

6.0 LIST OF REFERENCES

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APPENDIX A

LIST OF PARCELS
OFFERED FOR SALE IN THE
JULY 2014 OIL AND GAS LEASE SALE

NV-14-07-002 1922.190 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 004 LOTS 1-4;
004 S2N2,S2;
005 LOTS 1-4;
005 S2N2,S2;
006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;

NV-14-07-003 2554.360 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 007 LOTS 1-4;
007 E2,E2W2;
008 ALL;
017 ALL;
018 LOTS 1-4;
018 E2,E2W2;

NV-14-07-005 2520.000 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 013 E2,N2NW,SWNW,SW;
014 ALL;
015 ALL;
016 ALL;

NV-14-07-006 1878.330 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 019 LOTS 1-3;
019 E2,E2W2;
020 ALL;
029 ALL;

NV-14-07-007 2560.000 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 021 ALL;
022 ALL;
023 ALL;
024 ALL;

NV-14-07-008 2560.000 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 025 ALL;
026 ALL;
027 ALL;
028 ALL;

NV-14-07-009 2560.000 Acres
T.0080N, R.0380E, 21 MDM, NV
Sec. 033 ALL;
034 ALL;
035 ALL;
036 ALL;

NV-14-07-010 1919.160 Acres
T.0030N, R.0400E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
012 ALL;
013 ALL;

NV-14-07-011 1427.720 Acres
T.0030N, R.0400E, 21 MDM, NV
Sec. 005 S2S2;
007 LOTS 1-4;
007 E2,E2W2;
008 ALL;

NV-14-07-012 2560.000 Acres
T.0030N, R.0400E, 21 MDM, NV
Sec. 015 ALL;
016 ALL;
020 ALL;
021 ALL;

NV-14-07-013 1924.040 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
002 LOTS 1-4;
002 S2N2,S2;
003 LOTS 1-4;
003 S2N2,S2;

NV-14-07-014 1904.740 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 004 LOTS 1-4;
004 S2N2,S2;
005 LOTS 1-4;
005 S2N2,S2;
006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;

NV-14-07-015 2537.160 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 007 LOTS 1-4;
007 E2,E2W2;
008 ALL;
017 ALL;
018 LOTS 1-4;
018 E2,E2W2;

NV-14-07-016 2560.000 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 009 ALL;
010 ALL;
011 ALL;
012 ALL;

NV-14-07-017 2560.000 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 013 ALL;
014 ALL;
015 ALL;
016 ALL;

NV-14-07-018 2537.800 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 019 LOTS 1-4;
019 E2,E2W2;
020 ALL;
029 ALL;
030 LOTS 1-4;
030 E2,E2W2;

NV-14-07-019 2560.000 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 021 ALL;
022 ALL;
023 ALL;
024 ALL;

NV-14-07-020 2560.000 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 025 ALL;
026 ALL;
027 ALL;
028 ALL;

NV-14-07-021 1909.520 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 031 LOTS 1-4;
031 E2,E2W2;
032 ALL;
033 ALL;

NV-14-07-022 1920.000 Acres
T.0030N, R.0410E, 21 MDM, NV
Sec. 034 ALL;
035 ALL;
036 ALL;

NV-14-07-024 1376.000 Acres
T.0170N, R.0410E, 21 MDM, NV
Sec. 005 PROT ALL;
006 PROT ALL;

NV-14-07-025 1348.000 Acres
T.0170N, R.0410E, 21 MDM, NV
Sec. 007 PROT ALL;
008 PROT ALL;
MAT SITE CC023392 - -STIP-OG44

NV-14-07-027 1920.000 Acres
T.0170N, R.0410E, 21 MDM, NV
Sec. 012 W2;
013 W2;
021 PROT ALL;
029 PROT ALL;

NV-14-07-028 2033.000 Acres
T.0170N, R.0410E, 21 MDM, NV
Sec. 017 PROT ALL;
018 PROT ALL;
019 PROT ALL;

NV-14-07-030 2003.000 Acres
T.0170N, R.0410E, 21 MDM, NV
Sec. 030 PROT ALL;
031 PROT ALL;
032 PROT ALL;

NV-14-07-031 1449.320 Acres
T.0080N, R.0420E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
002 SE;
011 LOTS 1-8;
012 E2;

NV-14-07-032 1400.000 Acres
T.0080N, R.0420E, 21 MDM, NV
Sec. 009 E2NE,N2NW,SWNW,SW,
NESE;
016 SWNE,W2,W2SE;
021 W2NE,W2,SE;

NV-14-07-034 1720.000 Acres
T.0080N, R.0420E, 21 MDM, NV
Sec. 013 E2;
014 W2;
023 W2,SE;
024 E2,E2NW,SWNW,SW;

NV-14-07-035 1057.630 Acres
T.0090N, R.0420E, 21 MDM, NV
Sec. 001 LOTS 1,2,5-7;
001 SWNE,E2SE;
012 LOTS 1-4;
012 W2E2;
013 LOTS 1-4;
013 W2E2;

NV-14-07-036 1305.360 Acres
T.0090N, R.0420E, 21 MDM, NV
Sec. 024 LOTS 1-4;
024 W2E2;
025 LOTS 1-4;
025 W2E2;
036 LOTS 1-4;
036 W2E2,W2;

NV-14-07-040 1195.470 Acres
T.0170N, R.0420E, 21 MDM, NV
Sec. 002 LOTS 1-3;
002 S2NE,SENW,S2;
011 ALL;

NV-14-07-043 643.760 Acres
T.0070N, R.0430E, 21 MDM, NV
Sec. 023 S2;
024 LOTS 3,4;
024 SW,W2SE;

NV-14-07-044 1291.060 Acres
T.0070N, R.0430E, 21 MDM, NV
Sec. 025 LOTS 1-4;
025 W2E2,W2;
026 ALL;

NV-14-07-045 2543.430 Acres
T.0070N, R.0430E, 21 MDM, NV
Sec. 027 ALL;
028 ALL;
033 LOTS 1-4;
033 N2,N2S2;
034 LOTS 1-4;
034 N2,N2S2;

NV-14-07-046 1289.710 Acres
T.0070N, R.0430E, 21 MDM, NV
Sec. 035 LOTS 1-4;
035 N2,N2S2;
036 LOTS 1-7;
036 W2NE,NW,N2SW,NWSE;

NV-14-07-051 1284.500 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 004 LOTS 1-4;
004 S2N2,S2;
005 LOTS 1-4;
005 S2N2,S2;

NV-14-07-052 1885.600 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;
007 LOTS 1-4;
007 E2,E2W2;
008 ALL;

NV-14-07-053 1903.120 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 016 ALL;
017 ALL;
018 LOTS 1-4;
018 E2,E2W2;

NV-14-07-054 1903.380 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 019 LOTS 1-4;
019 E2,E2W2;
020 ALL;
021 ALL;

NV-14-07-055 1956.160 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 022 ALL;
023 LOTS 1-7;
023 S2NE,SENW,E2SW,SE;
024 LOTS 1-4;
024 S2N2,S2;

NV-14-07-056 1459.240 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 025 NW;
026 LOTS 1-4;
026 E2,E2W2;
027 ALL;

NV-14-07-057 1903.420 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 028 ALL;
029 ALL;
030 LOTS 1-4;
030 E2,E2W2;

NV-14-07-058 1904.740 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 031 LOTS 1-4;
031 E2,E2W2;
032 ALL;
033 ALL;

NV-14-07-059 970.010 Acres
T.0090N, R.0430E, 21 MDM, NV
Sec. 034 ALL;
035 LOTS 1-5;
035 E2NW,NESW;

NV-14-07-060 1207.360 Acres
T.0100N, R.0430E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
009 E2,S2NW,SW;

NV-14-07-063 2520.000 Acres
T.0100N, R.0430E, 21 MDM, NV
Sec. 020 ALL;
021 N2,SW,N2SE,SWSE;
029 ALL;
032 ALL;
026 ALL;
035 ALL;

NV-14-07-067 1769.480 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,E2SW,SE;
002 LOTS 1-4;
002 S2N2,SW,W2SE;
003 LOTS 1-4;

NV-14-07-070 1680.000 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 010 ALL;
011 W2NE,W2,W2SE,SESE;
012 E2,NENW,SW;

003 S2N2,S2;

NV-14-07-071 1840.000 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 013 ALL;
014 ALL;
015 N2,N2S2,SWSW,SESE;

NV-14-07-072 2360.000 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 016 ALL;
021 ALL;
022 NENE,W2SW;
027 E2E2,W2W2;
028 ALL;

NV-14-07-073 1004.610 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 020 SESE;
032 SENE,W2,N2SE,SWSE;
033 LOTS 1,2;
033 E2,E2SW;

NV-14-07-074 1846.050 Acres
T.0110N, R.0430E, 21 MDM, NV
Sec. 023 ALL;
024 LOTS 1,2,4;
024 N2,SW;
026 E2,E2NW,SWNW,SW;

NV-14-07-078 1921.440 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
012 ALL;
014 ALL;

NV-14-07-079 1164.880 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 002 LOTS 1-3;
002 S2NE,SENW,SE;
004 LOTS 3,4;
004 S2NW,E2SE,SWSE;
008 N2,N2SW,SWSW,NWSE;

NV-14-07-080 1616.020 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 005 S2;
006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;
007 LOTS 1-4;
007 E2,E2W2;

NV-14-07-081 1480.000 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 011 E2E2,NWNE,SESW,W2SE;
013 N2NE,SWNE,W2,W2SE,SESE;
022 N2,SW,W2SE,SESE;

NV-14-07-082 1800.000 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 016 E2NE,SWNE,S2NW,S2;
020 ALL;
021 ALL;

NV-14-07-083 1690.850 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 017 S2N2,S2;
018 LOTS 1,2;
018 E2,E2W2;
019 LOTS 1-4;
019 E2,E2W2;

NV-14-07-084 1840.000 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 023 ALL;
024 W2NE,W2,SE;
026 ALL;

NV-14-07-085 1350.260 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 025 ALL;
036 LOTS 1-16;

NV-14-07-086 1280.000 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 027 ALL;
028 ALL;

NV-14-07-087 1730.400 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 029 ALL;
031 LOTS 5-6, 11-14, 19-20;
032 LOTS 1-12;
032 NE;

NV-14-07-088 1382.220 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 030 LOTS 1-4;
030 E2,E2W2;
033 LOTS 1-16;

NV-14-07-089 1459.140 Acres
T.0120N, R.0430E, 21 MDM, NV
Sec. 034 LOTS 1-16;
035 LOTS 1-16;

NV-14-07-094 720.000 Acres
T.0130N, R.0430E, 21 MDM, NV
Sec. 025 SW;
026 S2;
027 N2S2,S2SE;

NV-14-07-095 1038.460 Acres
T.0130N, R.0430E, 21 MDM, NV
Sec. 028 N2N2;
030 LOTS 1-4;
030 E2SW;
031 LOTS 1-4;
031 E2,E2W2;

NV-14-07-096 1269.920 Acres
T.0130N, R.0430E, 21 MDM, NV
Sec. 035 ALL;
036 LOTS 1-4;
036 W2,SE;

NV-14-07-097 1593.700 Acres
T.0140N, R.0430E, 21 MDM, NV
Sec. 001 LOTS 2-4;
001 SWNE,S2NW,SW,S2SE;
002 LOTS 4;
002 S2NW,SW,S2SE;
003 LOTS 1-3;
003 S2N2,S2;
004 SE;

NV-14-07-098 1040.000 Acres
T.0140N, R.0430E, 21 MDM, NV
Sec. 009 E2;
010 N2NW,SWNW,W2SW;
016 W2E2E2,W2E2,NW,SWSW,
E2SW;

NV-14-07-103 1731.260 Acres
T.0180N, R.0430E, 21 MDM, NV
Sec. 003 LOTS 1-4;
003 S2N2,S2;
004 LOTS 2-4;
004 S2N2,S2;
005 LOTS 1-4;
005 S2N2,N2S2;

NV-14-07-104 838.030 Acres
T.0180N, R.0430E, 21 MDM, NV
Sec. 006 LOTS 5-7;
006 SENW,E2SW;
007 LOTS 1-4;

NV-14-07-106 1278.460 Acres
T.0180N, R.0430E, 21 MDM, NV
Sec. 016 ALL;
018 LOTS 1-4;
018 E2,E2W2;

007 NWNE,S2NE,E2W2,SE;

NV-14-07-107 1197.28 Acres
T.0180N, R.0430E, 21 MDM, NV
Sec. 019 LOTS 1-4;
019 E2, E2W2;
020 N2NE, SWNE, W2, W2SE, SESE;

NV-14-07-108 637.180 Acres
T.0180N, R.0430E, 21 MDM, NV
Sec. 030 LOTS 1-4;
030 E2,E2W2;

NV-14-07-110 2520.000 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 010 ALL;
013 ALL;
014 ALL;
015 N2,N2SW,SESW,SE;

NV-14-07-111 2401.280 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 001 LOTS 1-4;
001 S2N2,S2;
002 LOTS 1,2;
002 S2NE,S2;
011 ALL;
012 ALL;

NV-14-07-112 2398.490 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 016 ALL;
017 SE;
019 LOTS 3,4;
019 E2SW,SE;
020 ALL;
021 ALL;

NV-14-07-113 2560.000 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 022 ALL;
023 ALL;
024 ALL;
027 ALL;

NV-14-07-114 2560.000 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 025 ALL;
026 ALL;
035 ALL;
036 ALL;

NV-14-07-115 1920.000 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 028 ALL;
033 ALL;
034 ALL;

NV-14-07-116 2553.500 Acres
T.0070N, R.0440E, 21 MDM, NV
Sec. 029 ALL;
030 LOTS 1-4;
030 E2,E2W2;
031 LOTS 1-4;
031 E2,E2W2;
032 ALL;

NV-14-07-120 1911.670 Acres
T.0110N, R.0440E, 21 MDM, NV
Sec. 006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;
007 LOTS 1-4;
007 E2,E2W2;
018 LOTS 1-4;
018 E2,E2W2;
SWSE;

NV-14-07-122 1376.200 Acres
T.0110N, R.0440E, 21 MDM, NV
Sec. 004 LOTS 1,2,5-21;

NV-14-07-123 1922.980 Acres
T.0110N, R.0440E, 21 MDM, NV
Sec. 005 LOTS 1-4;

009 LOTS 1-8;
009 W2;

NV-14-07-128 1715.120 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 002 LOTS 5-8;
002 S2N2,E2S2,E2SE;
003 LOTS 5-11;
003 S2NE,SENW,E2SW,SE;
004 LOTS 1-4;
004 S2N2,S2;

NV-14-07-129 1923.780 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 005 LOTS 1-4;
005 S2N2,S2;
008 ALL;
009 ALL;

NV-14-07-130 1658.120 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;
007 LOTS 1-4;
007 E2,E2W2;
018 LOTS 1,4;
018 E2E2,NWNE,NENW,SESW,

NV-14-07-131 1113.150 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 010 LOTS 1-4;
010 E2,E2W2;
015 LOTS 1-4;
015 E2,E2W2;

NV-14-07-132 1060.610 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 011 W2;
022 LOTS 1-4;
022 E2,E2W2;
023 N2,SW;

NV-14-07-133 1659.710 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 016 ALL;
017 ALL;
019 LOTS 5-12;
019 E2NE;

NV-14-07-134 2560.000 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 020 ALL;
021 ALL;
028 ALL;
029 ALL;

NV-14-07-136 908.540 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 030 LOTS 5-13,16,17,20;
031 LOTS 5,8,9,12-16;
031 SE;

NV-14-07-137 968.140 Acres
T.0120N, R.0440E, 21 MDM, NV
Sec. 032 LOTS 1-4;
032 E2,NW;
033 W2;

NV-14-07-138 2560.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 012 ALL;
013 ALL;
014 ALL;
015 ALL;

NV-14-07-140 800.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 020 NE;
021 ALL;

NV-14-07-141 1920.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 022 ALL;
023 ALL;

024 ALL;

NV-14-07-142 1920.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 025 ALL;
026 ALL;
027 ALL;

NV-14-07-143 640.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 028 ALL;

NV-14-07-144 953.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 031 LOTS 3,4;
031 E2SW;
032 SE;
033 ALL;

NV-14-07-145 1760.000 Acres
T.0140N, R.0440E, 21 MDM, NV
Sec. 034 ALL;
035 ALL;
036 N2,SW;

NV-14-07-146 1588.710 Acres
T.0140N, R.0450E, 21 MDM, NV
Sec. 004 LOTS 3,4;
004 S2NW,SW;
005 LOTS 1-4;
005 S2N2,S2;
006 LOTS 1-7;
006 S2NE,SENW,E2SW,SE;

NV-14-07-147 1580.180 Acres
T.0140N, R.0450E, 21 MDM, NV
Sec. 007 LOTS 1-4;
007 E2,E2W2;
008 ALL;
009 W2;

NV-14-07-148 1581.280 Acres
T.0140N, R.0450E, 21 MDM, NV
Sec. 016 W2;
017 ALL;
018 LOTS 1-4;
018 E2,E2W2;

NV-14-07-149 1583.360 Acres
T.0140N, R.0450E, 21 MDM, NV
Sec. 019 LOTS 1-4;
019 E2,E2W2;
020 ALL;
021 NW;
021 PROT SW;

NV-14-07-150 1258.800 Acres
T.0140N, R.0450E, 21 MDM, NV
Sec. 029 W2;
030 LOTS 1-4;
030 E2,E2W2;
031 LOTS 1,2;
031 NE,E2NW;

NV-14-07-161 2080.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 001 PROT ALL;
002 PROT ALL;
003 PROT ALL;

NV-14-07-162 2084.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 010 PROT ALL;
011 PROT ALL;

NV-14-07-163 2084.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 013 PROT ALL;
014 PROT ALL;

012 PROT ALL;

NV-14-07-164 2085.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 022 PROT ALL;
023 PROT ALL;
024 PROT ALL;

NV-14-07-166 1280.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 032 PROT ALL;
033 PROT ALL;

015 PROT ALL;

NV-14-07-165 2086.000 Acres
T.0090N, R.0530E, 21 MDM, NV
Sec. 025 PROT ALL;
026 PROT ALL;
027 PROT ALL;

APPENDIX B

OIL AND GAS LEASE PARCEL STIPULATIONS AND NOTICES

TIMING LIMITATION STIPULATION

Migratory Birds

Surface-disturbing activities during the migratory bird nesting season (March 1 to July 31) may be restricted in order to avoid potential violation of the Migratory Bird Act. Appropriate inventories of migratory birds shall be conducted during analysis of actual site development. If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying of nesting material, transporting of food), the proponent shall coordinate with BLM to establish appropriate protection measures for the nesting sites. Protection measures may include avoidance or restricting or excluding development in certain areas until nests and nesting birds will not be disturbed. After July 31, no further avian survey, will be conducted until the following year.

Parcel	Description of Lands
NV-14-07-002 THRU **NV-14-07-166**	All Lands

LEASE NOTICE

Threatened, Endangered, and Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it complete its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. &1531 et seq., including completion of any required procedure for conference or consultation.

Authority: BLM Washington Office Instruction Memorandum 2002-174; Endangered Species Act

Plants
A list of BLM special status plant species can be found in Appendix E, and seasonally appropriate surveys for the respective species by a qualified biologist will be required before surface disturbance will be authorized.

Parcels	Description of Lands
NV-14-07-002 THRU **NV-14-07-166**	All Lands

MATERIAL SITE STIPULATION

The lessee accepts this lease subject to the right of the State of Nevada to remove road building material from the land embraced in Material Site No. CC023392 and agrees that its operations will not interfere with the material operations of the Department of Transportation.

Parcels	Description of Lands
NV-14-07-025	T. 17 N, R. 41 E. Sec. 7 SWNW

TIMING LIMITATION STIPULATION

Mule deer (*Odocoileus hemionus*) **Winter Range**

No surface use is allowed from January 15 – May 15 in the following parcels within the Tonopah Field Office area. This stipulation does not apply to operations and maintenance of production facilities.

Parcels	Description of Lands
NV-14-07-038	All
NV-14-07-039	All
NV-14-07-076	T. 11N., R. 43E., Sec. 30 NE, E ½ SE Sec. 31 W ½ NE
NV-14-07-080	T. 12N., R. 43E., Sec. 6 W ½ W ½ ; Sec. 7 W ½ W ½
NV-14-07-083	T. 12N., R. 43E., Sec. 18 W ½ W ½ ; Sec. 19 W ½ W ½
NV-14-07-087	T. 12N., R. 43E., Sec. 31 W ½
NV-14-07-088	T. 12N., R. 43E., Sec. 30 W ½ W ½
NV-14-07-095	T. 13N., R. 43E., Sec. 31 W ½ W ½ W ½

LEASE NOTICE

Special Status Fish Species

The following parcels are in watersheds with known populations of BLM sensitive status fish species and, according to the National Hydrography Dataset (NHD), contain a perennial stream segment. As not all populations of these species have been surveyed, it must be assumed that these species could exist in the perennial streams of these parcels. Therefore, no activities that adversely impact the sediment or water budgets in the perennial stream systems will be permitted.

Populations of the Big Smokey Valley Speckled Dace may exist in the following parcels:

Parcels	Description of Lands
NV-14-07-083	Perennial Streams
NV-14-07-133	Perennial Streams
NV-14-07-134	Perennial Streams

Populations of the Big Smokey Valley Tui Chub (*Gila Bicolor sp 8*) may exist in the following parcels:

Parcels	Description of Lands
NV-14-07-079	Perennial Streams
NV-14-07-095	Perennial Streams
NV-14-07-097	Perennial Streams
NV-14-07-130	Perennial Streams

LEASE NOTICE

Cultural Resources

Operators are advised that the proposed activity area has not been surveyed for cultural resources. Furthermore, a records check of the cultural resource data files at the Mount Lewis Field Office indicates a strong likelihood of encountering cultural resources in these locations. The BLM therefore strongly recommends that the operator retain the services of an archaeological contractor to avoid damage to cultural resources. The Native American Graves Protection and Repatriation Act (NAGPRA: 43 CFR 10), protects items of cultural patrimony, Native American funerary items, Native American remains and sacred objects. In addition, the Archaeological Resources Protection Act (ARPA: 43 CFR 7.4, 7.14, 7.15, 7.16) provides for civil and/or criminal penalties for the disturbance of archaeological resources on federal lands and if such disturbance is the result of activities conducted by the operator, they could be liable for such damages. If cultural resources, Native American remains, funerary items, scared items, or objects of cultural patrimony are discovered, the operator must cease operations in the vicinity of the discovery and ensure adequate protection to the discovery, then notify the BLM immediately, by telephone, with written confirmation to follow (43 CFR 10.4 (c), (d), (g); Nevada State Protocol Agreement VIII (b)). Notification should be made to the BLM Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV, 89820, (775) 635-4000. No activity in the vicinity of the discovery should resume until the operator has been issued a Notice to Proceed by the Authorized Officer.

Parcels	Description of Lands
NV-14-07-002	
THRU	All Lands
NV-14-07-166	

NOTICE TO LESSEE

Wild Horse and Burros

The use of helicopter below 500' AGL would be prohibited between March 1 and June 30 to prevent disruption during the foaling period and orphan or abandoned foals.

The BLM has long standing policy about the use of aircraft during the foaling period and is essentially restricted from using aircraft to inventory or gather wild horses during the peak foaling season. Wild horses will run when in the presence of aircraft. Mares may not wait for foals and may abandon them, especially when foals are young.

If operations cause a water source to become unavailable to wild horses, the Authorized Officer may require a new well to be drilled or another water development to be constructed in the general area to provide adequate water for the wild horses. If the lease area is within an HMA, the Field Manager may require additional measures for the protection of wild horses such as seasonal restrictions during the peak foaling period. Additional measures could include placement of equipment away from important water sources, or placement of equipment outside of areas suitable for use or movement by wild horses.

Saulsbury HMA

Parcels	Description of Lands
NV-14-07-114	T. 7N., R. 44E., Sec. 25 E ½, SE Sec. 36 SW, E ½

Sand Springs West HMA

Parcels	Description of Lands
NV-14-07-161	All Lands
NV-14-07-162	All Lands
NV-14-07-163	All Lands
NV-14-07-164	All Lands
NV-14-07-165	All Lands
NV-14-07-166	All Lands

NOTICE TO LESSEE

Fire

The following precautionary measures should be taken to prevent wildland fires. In the event your operations should start a fire, you could be held liable for all suppression costs.

- All vehicles should carry fire extinguishers and a minimum of 10 gallons of water.
- Adequate fire-fighting equipment i.e. shovel, pulaski, extinguisher(s) and a minimum10 gallons of water should be kept at the drill site(s).
- Vehicle catalytic converters should be inspected often and cleaned of all brush and grass debris.
- When conducting welding operations, they should be conducted in an area free from or mostly free from vegetation. A minimum of 10 gallons water and a shovel should be on hand to extinguish any fires created from the sparks. Extra personnel should be at the welding site to watch for fires created by welding sparks.
- Report wildland fires immediately to the BLM Central Nevada Interagency Dispatch Center (CNIDC) at (775) 623-3444. Helpful information to reported is location (latitude and longitude if possible), what's burning, time started, who/what is near the fire and direction of fire spread.
- When conducting operations during the months of May through September, the operator must contact the BLM Battle Mountain District Office, Division of Fire and Aviation at (775) 635-4000 to find out about any fire restrictions in place for the area of operation and to advise this office of approximate beginning and ending dates for your activities.

All Parcels

NOTICE TO LESSEE

Cultural Resources

Cultural Resources and Tribal Consultation Stipulation

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13175, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., State Historic Preservation Officer (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

All Parcels

NOTICE TO LESSEE

Paleontological Resources

Paleontological resources constitute a fragile and non-renewable scientific record of the history of life on earth. Although no paleontological resources are known or identified in the immediate area, this project may have an unintended adverse effect on such resources. The operator should note that fossils are not part of the mineral estate. Paleontological resources are protected by the Paleontological Resources Protection Act (OPLA-PRP: Omnibus Public Land Management Act of 2009 Paleontological Resources Preservation Subtitle 123 Stat. 1172, 16 U.S.C. 470aaa et seq.) which establishes criminal and civil penalties. The operator should also be aware that if paleontological resources are found in direct association with cultural resources, then such occurrences are subject to Archaeological Resource Protection Act (ARPA: 43 CFR 7.4, 7.14, 7.15, 7.16) provisions. OPLA-PRP requires that the nature and location of paleontological resources on public lands be kept confidential. If paleontological resources are discovered, the operator must cease operations in the vicinity of the discovery and ensure adequate protection to the discovery, then notify the BLM immediately, by telephone, with written confirmation to follow. Notification should be made to the BLM, Battle Mountain District Office, 50 Bastian Road, Battle Mountain, NV, 89820, (775-635-4000). No activity in the vicinity of the discovery should resume until the operator has been issued a Notice to Proceed by the Authorized Officer.

All Parcels

NOTICE TO LESSEE

Native American Consultation

In accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the Federal Land Policy and Management Act (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (p.L. 101-601) and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on the proposed project. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities and resources.

BLM reserves the right to deny or alter proposed activities associated with any surface occupancy that results from Oil, Gas and Geothermal leasing. Maintaining physical and spiritual integrity of certain locations within the BMD administrative boundary is detrimental to present and future cultural/spiritual/traditional activities. In accordance with Federal legislation and executive orders, Federal agencies must consider the impacts their actions may have to Native American traditions and religious practices. Consequently, the BLM must take steps to identify locations having traditional/cultural or religious values to Native Americans and insure that its actions do not unduly or unnecessarily burden the pursuit of traditional religion or traditional lifeways.

(All parcels included in Appendix A are recommended to include this notice. Due to the sensitivity of the unique resources of the Big Smoky Valley, Native American related stipulations should be applied. Companies or individuals moving forward with lease purchases within or in close proximity to sensitive areas noted above can expect an extensive, complex and lengthy Native American consultation process.)

All Parcels

NOTICE TO LESSEE

General Occupancy

Surface occupancy may be restricted for specific periods by the BLM's authorized officer for reasons that include, but are not limited to (a) extended periods of high soil moisture or runoff when unusual road damage or land surface rutting can occur and (b) disturbance activity that could have a significant effects on sage-grouse breeding or brood-rearing, raptor nesting, or crucial deer or pronghorn antelope wintering areas.

Warming and cooling trends during winter, spring runoff events and other large precipitation events can contribute to extended periods of high soil moisture or runoff that can cause road damage or land surface rutting. These issues can be compounded in areas where slopes are greater than 30%.

All Parcels

APPENDIX C

DEFERRED PARCELS

In response to public concerns, an additional 21 parcels and 5 formerly partially deferred parcels, totaling approximately 44,311 acres, were fully deferred after a reevaluation of ground and surface waters and other natural resource values, including wildlife habitat.

Newly deferred parcel	Acres	Rationale
NV-14-07-001	1,918.84	The parcel is located on a wetland/floodplain near springs.
NV-14-07-004	2,560.00	The parcel is located on wetland/floodplain near springs.
NV-14-07-023	1,941.00	The parcel overlaps areas earmarked for disposal to Lander County.
NV-14-07-026	1,920.00	The parcel overlaps areas earmarked for disposal to Lander County.
NV-14-07-033	1,440.00	The parcel is located in association with riparian and Bighorn sheep habitat.
NV-14-07-068	1,509.19	The parcel is located in association with a perennial stream with potential Big Smokey Valley Speckled Dace and wetlands, shallow ground water.
NV-14-07-069	664.16 to 1,084.50	The original partial deferral was due to sage grouse habitat. The full deferral is due to a shallow water table, wetlands.
NV-14-07-090	1,440.00	The parcel has shallow ground water table, wetlands.
NV-14-07-091	1,028.58	The parcel contains potential habitat for the Big Smokey Valley Tui Chub and a wetland with shallow groundwater table.

NV-14-07-092	1,920.00	The groundwater table in the parcel is shallow, wetland.
NV-14-07-093	1,026.88	The parcel is characterized by a shallow water table with a wetland and is potential habitat for the Big Smokey Valley Tui Chub.
NV-14-07-099	1,160.00	The groundwater table is shallow, wetland.
NV-14-07-102	716.08 to 912.23	The originally deferred acreage was due to Sage grouse habitat. The full deferral is due to riparian habitat.
NV-14-07-124	428.27 to 1,710.73	The full deferral is due to sage grouse habitat.
NV-14-07-135	320.00 to 780.35	The originally deferred acreage was due to sage grouse habitat. The full deferral is due to a perennial stream with potential Lahonton Cutthroat Trout (LCT) habitat.
NV-14-07-139	1,109.20	The parcel contains a wetland.
NV-14-07-151	1,118.08	The parcel is located in high quality wildlife habitat near a Wilderness Study Area (WSA) and a proposed Area of Critical Environmental Concern (ACEC).
NV-14-07-152	201.13 to 1,721.31	The originally deferred acreage was due to sage grouse habitat. The full deferral is due high quality wildlife habitat and a perennial stream.
NV-14-07-153	1,600.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-154	2,240.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.

NV-14-07-155	640.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-156	2,001.65	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-157	2,160.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-158	1,920.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-159	1,600.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.
NV-14-07-160	1,160.00	The parcel contains springs, high quality wildlife habitat and a perennial stream.

TFO Greater Sage-grouse Parcel Deferral List

Pending the US Fish and Wildlife Services (FWS) decision to list the Greater Sage-grouse (GSG) under the Endangered Species Act, the BLM Tonopah Field Office has elected the following parcels for deferral from the oil and gas lease sale of 2014. Further degradation of Preliminary Priority Habitat (PPH) prior to FWS's decision would/could contribute to the lack of habitat protections that the FWS has deemed a contributing factor to the decline in GSG populations. Initially the parcels or portion of parcels listed below were considered Preliminary General Habitat (PGH). During site visit the following parcels were found to have habitat qualities consistent with PPH.

Parcel	Description of Lands
NV-14-07-037	All Lands
NV-14-07-038	All Lands
NV-14-07-039	All Lands
NV-14-07-076	All Lands
NV-14-07-087	T. 12N., R. 43E. Sec. 31 Lots 7-10, 15-18
NV-14-07-121	All Lands

The aforementioned parcels and/or portions of parcels are located within areas where Wyoming/Mountain Big sage Brush habitat, near perennial water, exists on the eastern and western benches of the Big Smokey Valley within the Tonopah Field Office. The deferred areas are primarily used as winter range for GSG, but some lekking/brood rearing and summer use is likely. Forbs and grasses are prevalent in these areas, compared to areas of lower elevation within Big Smokey Valley.

Habitat is evaluated based on distance from perennial water, sagebrush cover (height and species is considered), amount of grass and forb understory and contiguity of seasonal habitat (ie summer, winter, lekking/brood rearing habitat).

Deferrals identified based on proximity of leks (<4 Miles)

Parcel	Description of Lands
NV-14-07-127	All Lands
NV-14-07-128	T. 12N., R. 44E. Sec. 02 E ½ SE ¼
NV-14-07-132	T. 12N., R. 44E. Sec. 11 E ½ Sec. 23 SE ¼

MLFO Sage Grouse Deferral List

Pending the US Fish and Wildlife Services (FWS) decision to list the Great Sage Grouse (GSG) as a "Threatened" species under the Endangered Species Act, the BLM Mount Lewis Field Office has elected the following parcels for deferral from the oil and gas lease sale of 2014. Further degradation of PPH (Preliminary Priority Habitat) prior to FWS's decision would/could contribute to the lack of habitat protections that the FWS has deemed a contributing factor to the decline in GSG populations. Initially the parcels or portion of parcels listed below were considered PGH (Preliminary General Habitat). During site visits the parcels were found to have habitat qualities consistent with PPH. Parcel suitability for sage-grouse was evaluated based on 1) habitat conditions (i.e., dominated by Wyoming, Mountain, or low sagebrush habitat, 2) habitat continuity with designated PPH, 3) perennial water sources and/or other riparian areas (seeps, springs, meadows) within 1 mile of the parcel, 4) active or unknown leks within 4 miles of the parcel. Site visits indicate that most of the parcels recommended for deferral are primarily used as winter range for GSG, but some brood rearing and summer use is likely.

Parcel	Land Description
NV-14-07-027	T. 17N., R. 41E. Sec. 22
NV-14-07-029	All Lands
NV-14-07-040	T. 17N., R 42E. Sec. 1 Lots 1-4; Sec. 1 S2N2, S2; Sec. 12 All
NV-14-07-041	All Lands
NV-14-07-042	All Lands
NV-14-07-100	All Lands
NV-14-07-101	All Lands
NV-14-07-103	T. 18N., R. 43E. Sec. 2 Lots 3,4, S1/2NW, SW
NV-14-07-105	All Lands
NV-14-07-106	T. 18N., R. 43E. Sec. 15
NV-14-07-107	T. 18N., R. 43E. Sec. 21 All Sec. 22 NW

NV-14-07-108	T. 18N., R 43E. Sec. 28 E1/2, NW, E1/2SW Sec. 29 N1/2, SW, W1/2SE
NV-14-07-109	All Lands

Minerals Deferrals

The following parcels lie within a locatable minerals approved Plan of Operations boundary

Parcel	Land Description
NV-14-07-047	All Lands
NV-14-07-048	All Lands
NV-14-07-049	All Lands
NV-14-07-050	All Lands
NV-14-07-061	All Lands
NV-14-07-062	All Lands
NV-14-07-064	All Lands
NV-14-07-065	All Lands
NV-14-07-066	All Lands
NV-14-07-075	All Lands
NV-14-07-077	All Lands
NV-14-07-117	All Lands
NV-14-07-118	All Lands
NV-14-07-119	All Lands
NV-14-07-125	All Lands
NV-14-07-126	All Lands

APPENDIX D

BATTLE MOUNTAIN DISTRICT
SPECIAL STATUS SPECIES LIST

BMDO Special Status Plant Species List

Common Name	Scientific Name	Status*
PLANTS		
Eastwood milkweed	*Asclepias eastwoodiana*	NS
Cima milkvetch	*Astragalus cimae* var. *cimae*	NS
Tonopah milkvetch	*Astragalus pseudiodanthus*	NS
Toquima milkvetch	*Astragalus toquimanus*	NS
Currant milkvetch	*Astragalus uncialis*	NS
Elko rockcress	*Boechera falcifructa*	NS
Monte Neva paintbrush	*Castilleja salsuginosa*	NS
Tecopa birdbeak	*Cordylanthus tecopensis*	NS
Goodrich biscuitroot	*Cymopterus goodrichii*	NS
Nevada willowherb	*Epilobium nevadense*	NS
Windloving buckwheat	*Eriogonum anemophilum*	NS
Beatley buckwheat	*Eriogonum beatleyae*	NS
Tiehm buckwheat	*Eriogonum tiehmii*	NS
Sand cholla	*Grusonia pulchella*	NS
Lunar Crater buckwheat	*Johanneshowellia crateriorum*	NS
Holmgren lupine	*Lupinus holmgrenianus*	NS
Low feverfew	*Parthenium ligulatum*	NS
Pahute Mesa beardtongue	*Penstemon pahutensis*	NS
Lahontan beardtongue	*Penstemon palmeri* var. *macranthus*	NS
Bashful beardtongue	*Penstemon pudicus*	NS
Tiehm beardtongue	*Penstemon tiehmii*	NS
Clarke phacelia	*Phacelia filiae*	NS

Williams combleaf	*Polyctenium williamsiae*	NS
Blaine pincushion	*Sclerocactus blainei*	NS
Tonopah pincushion	*Sclerocactus nyensis*	NS
Railroad Valley globemallow	*Sphaeralcea caespitosa* var. *williamsiae*	NS
Lone Mountain goldenhead	*Tonestus graniticus*	NS

***Status**
FE = Federal Endangered
FP = Federal Proposed Endangered
FT = Federal Threatened
FC = Federal Candidate
NS = Nevada BLM Sensitive Species

BMDO Special Status Wildlife Species List

Common Name	Scientific Name	Status*
BIRDS		
Northern goshawk	*Accipiter gentilis*	NS
Golden eagle	*Aquila chrysaetos*	NS
Burrowing owl	*Athene cunicularia*	NS
Ferruginous hawk	*Buteo regalis*	NS
Swainson's hawk	*Buteo swainsoni*	NS
Greater sage-grouse	*Centrocercus urophasianus*	FC, NS
Snowy plover	*Charadrius alexandrinus*	FT, NS
Yellow-billed cuckoo	*Coccyzus americanus*	FC
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE
Peregrine falcon	*Falco peregrinus*	NS
Pinyon jay	*Gymnorhinus cyanocephalus*	NS
Bald eagle	*Haliaeetus leucocephalus*	NS
Loggerhead shrike	*Lanius ludovicianus*	NS
Black rosy-finch	*Leucosticte atrata*	NS
Lewis' woodpecker	*Melanerpes lewis*	NS
Sage thrasher	*Oreoscoptes montanus*	NS
Brewer's sparrow	*Spizella breweri*	NS
FISH		
Railroad Valley springfish	*Crenichthys nevadae*	FT

Hot Creek Valley tui chub	*Gila bicolor ssp. 5*	NS
Railroad Valley tui chub	*Gila bicolor ssp. 7*	NS
Fish Lake Valley tui chub	*Gila bicolor ssp. 4*	NS
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	FT
Monitor Valley speckled dace	*Rhinichthys osculus ssp. 5*	NS
MAMMALS		
Pallid bat	*Antrozous pallidus*	NS
Pygmy rabbit	*Brachylagus idahoensis*	NS
Townsend's big-eared bat	*Corynorhinus townsendii*	NS
Big brown bat	*Eptesicus fuscus*	NS
Spotted bat	*Euderma maculatum*	NS
Silver-haired bat	*Lasionycteris noctivagans*	NS
Western red bat	*Lasiurus blossevillii*	NS
Hoary bat	*Lasiurus cinereus*	NS
Dark kangaroo mouse	*Microdipodops megacephalus*	NS
Pale kangaroo mouse	*Microdipodops pallidus*	NS
California myotis	*Myotis californicus*	NS
Western small-footed myotis	*Myotis ciliolabrum*	NS
Long-eared myotis	*Myotis evotis*	NS
Little brown myotis	*Myotis lucifugus*	NS
Fringed myotis	*Myotis thysanodes*	NS
Long-legged myotis	*Myotis volans*	NS
Western pipistrelle	*Pipistrellus hesperus*	NS
Pika	*Ochotona princeps*	NS
Bighorn sheep	*Ovis canadensis*	NS
Brazilian free-tailed bat	*Tadarida brasiliensis*	NS
Fish Spring pocket gopher	*Thomomys bottae abstrusus*	NS
San Antonio pocket gopher	*Thomomys bottae curatus*	NS
AMPHIBIANS		
Amargosa toad	*Anaxyrus nelsoni*	NS
Columbia spotted frog	*Rana luteiventris*	FC, NS
REPTILES		
Desert tortoise	*Gopherus agassizii*	FT, NS
INSECTS		
Crescent Dunes aegialian scarab	*Aegialia crescenta*	NS
Aegialian scarab beetle	*Aegialia knighti*	NS
Crescent Dunes aphodius scarab	*Aphodius sp. 2*	NS
Big Smoky wood nymph	*Cercyonis oetus alkalorum*	NS
White River wood nymph	*Cercyonis pegala pluvialis*	NS
White Mountains skipper	*Hesperia miriamae longaevicola*	NS
Railroad Valley skipper	*Hesperia uncas fulvapalla*	NS

White River valley skipper	*Hesperia uncas grandiosa*	NS
Great Basin small blue	*Philotiella speciosa septentrionalis*	NS
Crescent Dunes serican scarab	*Serica ammomenisco*	NS
Sand Mountain serican scarab	*Serica psammobunus*	NS

MOLLUSCS

Southern duckwater pyrg	*Pyrgulopsis anatine*	NS
Large-gland carico pyrg	*Pyrgulopsis basiglans*	NS
Carinate duckwater pyrg	*Pyrgulopsis carinata*	NS
Dixie Valley pyrg	*Pyrgulopsis dixensis*	NS
Oasis Valley pyrg	*Pyrgulopsis micrococcus*	NS
Wong's pyrg	*Pyrgulopsis wongi*	NS

***Status**

FE = Federal Endangered
FC = Federal Candidate
FP = Federal Proposed Endangered
NS = Nevada BLM Sensitive Species
FT = Federal Threatened

APPENDIX E

PUBLIC COMMENTS AND RESPONSES

As of March 13, 2014, which was the last day of the public comment period for this EA, approximately 5,100 comments were received. The overwhelming majority of these comments were fashioned from a mass form letter from an animal welfare organization. These "form letters" were reviewed and considered, however, only yielded three substantive comments. The majority of the commenters expressed concerns with regard to site-specific impacts to wild horse and burros, water usage, hydraulic fracturing, potential ground and surface water contamination associated with exploration and development activities and a host of other concerns regarding impacts to natural resources

Public comments and responses to public comments are included in this appendix. While each comment letter is not included in its entirety, individual substantive or actionable comments that were identified in each letter, email, or other comment received, have been included in the following list. The comments and responses are organized under a heading containing the name of the commenter.

American Wild Horse Preservation Campaign (AWHPC)

AWHCP Comment #1

I request that the Bureau of Land Management (BLM) Battle Mountain District "2014 Oil & Gas Lease Environmental Assessment be amended to withdraw from nomination the following 13 parcels in order to ensure that federally protected wild horses will not be potentially harassed, disrupted or displaced: 156-158, 152-155, 161-163, 165-166 and 114.

AWHCP Response #1

The areas described have been declared open for oil and gas leasing by Resource Management Plan (RMP) decisions. In order to withdraw the parcels, it would be necessary to amend the current RMPs though a public process, which is beyond the scope of this EA.

However, due to the presence of the springs, perennial streams and the quality of wildlife habitat, the BLM is recommending parcels 152-155 in the Seven Mile HMA and parcels 156-158 in the Fish Creek HMA for deferral, which means they cannot be sold as oil and gas lease parcels for a period of at least 2 years.

AWHCP Comment #2

Wild horses from four Herd Management Areas (HMAs) and one Wild Horse Territory (WHT) would be negatively impacted by the currently proposed parcels being made for lease auction.

AWHCP Response #2

Potential impacts of leasing in HMAs are described in Sections 3.4.16 and 4.4.16. Future exploration operations, should they be proposed in any of the 7 parcels, would be addressed in a site-specific NEPA document. See also AWHCP Response #1 on recommended parcel deferrals.

AWHCP Comment #3

In addition to the disruption and lost habitat resulting from potential leasing of the parcels, hydraulic fracturing for natural gas and oil extraction requires an enormous amount of water. In these times of drought, when the BLM is taking about the need to remove even more horses from the range due to drought conditions, HMA and WHTs must be protected from extractive uses.

AWHCP Response #3

Future exploration and/or development, should they be proposed in any of the 7 parcels, would be addressed in a site-specific NEPA document. Please note that the BLM has recommended 7 parcels located in HMAs for deferral (see response #1).

Deniz Bolbol (DB)

DB Comment #1

The current draft EA does not adequately address or analyze the negative impacts the proposed action will have on wild horses in and around the proposed parcels areas.

DB Response #1

The action of leasing a parcel for potential Oil and Gas exploration does not involve any further action than the issuance of the lease itself. Should any of the lease parcels be pursued for exploration, a site-specific environmental document would be prepared to discuss the particular proposed action, and potential impacts as derived from the site specific information. The information discussed in Section 3.4.16 of the EA provides an adequate analysis of the lease action with an additional overview of potential indirect impacts should exploration and development occur.

DB Comment #2

Substantive comments 'reveal new information, missing or flawed analysis that would substantially change conclusions' in the draft plan. In addition to the more than 6,800 members of the public who have individually submitted substantive comments via email, an additional 2,200 comments were inadvertently sent to the wrong email address (Please see attachment A). We request these public comments are entered into the record and counted.

DB Response #2

Comments received from the public are used as a means to improve management and ensure that issues have been identified and addressed. Most comment letters received via e-mail pertaining to wild horses were in a form letter format and were essentially identical. Those letters contained three distinct comments which have been responded to in responses 1-3 above in the AWHPC responses.

DB Comment #3

The draft EA fails to address the impacts that would occur due to the use of massive amounts of water that would be utilized by making available the parcels for lease sale. Given the drought conditions, the impacts would be even more dramatic given the already shrinking water tables. Specific documentation, which accounts for potential water usage that would be necessary to support gas/oil exploration and development for the proposed parcels, must be analyzed. Before parcels are included in this sale lease, the BLM must determine the impact commercial use of these public lands will have on water resources in the area.

Specific impacts to springs, wells, all surface and subsurface water sources must be individually identified and quantified in conjunction with possible subsurface water tables which would be impacted of the sale proceeded and exploratory or extractive use were to occur. Given that the BLM routinely blames wild horses for use of limited water sources, it is imperative that the water usage for these proposed parcels and the proposed gas/oil exploration/development must be measured against the amounts of water that wild horses in and around the area utilize.

In addition, should parcels in HMAs/WHT be leased for oil/gas exploration/development, water sources in and around these areas, water sources in the HMAs/WHT must be tested for all pollutants which may result from the proposed action.

DB Response #3

At this time, no exploration or development is being proposed. There would be no water consumption associated with the lease sale of the parcels. Should drilling be proposed in the future in any of the parcels, a site-specific environmental document would be completed and made available to the public which describes the specific proposed actions and the potential impacts. Please note that the BLM has recommended 7 parcels located in HMAs for deferral (Please refer to AWHPC Response #1).

DB Comment #4

While general disturbance is mentioned in the EA. the location of all surface disturbances (e.g. roads, location of roads, etc.) must be assessed against wild horse usage. The draft EA fails to assess and analyze the surface disturbance that will or may occur based on the proposed action. The BLM must revise the EA to outline the location of the roads, potential gas/lease exploration/development sites and all associated surface uses/disturbances in relation to wild horse use (including migratory patterns, horse numbers in the areas, water sources used by horses in the area, etc.).

DB Response #4

Please refer to AWHPC Response #1

DB Comment #5

The EA must be revised to outline the "best management practices" and the "specific restrictions" which would "be implemented to minimize negative impacts to wild horses."

DB Response #5

Site-specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site-specific NEPA document.

DB Comment #6

The EA fails to analyze negative environmental impacts.

DB Response #6

Please refer to DB Response #1.

DB Comment #7

THE EA FAILS TO TAKE A HARD LOOK AT IMPACTS TO WILD HORSES
NEPA requires federal agencies to conduct environmental analyses that *"include all potentially affected resources,* ecosystems, and human communities." There can be no question here that wild horses, protected under the 1971 Wild Free-Roaming Wild Horses and Burro Act as an "integral part of the natural system of the public lands," are affected resources within the project area.

DB Response #7

Please refer to DB Response #1.

DB Comment #8

Further, the BLM's NEPA Handbook advises on page 42: "Is there disagreement about the best way to use a resource, or resolve an unwanted resource condition, or *potentially significant effects of a proposed action or alternative?"* If the answer is "yes," you may benefit from subjecting the issue to analysis. Entire resources cannot be issues by themselves, *but concerns over how a resource may be affected by the proposal can be issues."* (Emphasis added.)

DB Response #8

Please refer to DB Response #1.

DB Comment #9

The EA for the Proposed Action fails to:

Describe and identify the current wild horse use of the nominated parcels and areas which include roads that may be utilized by gas/oil exploration and/or development operations including, but not limited to, census of horses living in each of the areas (please include census map plotting horse sightings), demographic information about the horses living in these areas, map outlining; Inventory and describe all water sources in the affected HMAs (include description of current

uses of each water source, availability, use by wild horses, any and all data which may reveal aquifer relatedness to springs and water sources, etc.).

DB Response #9

Please refer to DB #1.

DB Comment #10

The EA fails to adequately describe and analyze the following impacts to wild horses and the actions which would be taken to mitigate these impacts:

- Displacement of wild horses from winter, spring, summer habitat
- Fragmentation of wild horse habitat as projected
- Human presence disturbance to wild horse habitat
- Noise disturbance to wild horse habitat
- Injury or death due of wild horses to vehicular collisions due to increased traffic (including listing any previous vehicle-horse collisions resulting from the current mining operation)
- Potential impact of water sources (contamination, reduction of availability, etc) used by wild horses
- Alteration of wild horse migration routes and use of project area and surrounding areas

DB Response #10

Please refer to DB Response #1.

DB Comment #11

The revised EA must in more detail address the habitat loss, displacement and disturbance that would or may result from the proposed action which involves significant heavy equipment use, human activity, noise, pollution and other consequences. The EA must also address required mitigating action to prevent or minimize impacts to wild horses- merely noting that new fencing will be tagged is not sufficient in taking steps to address the impacts to wild horses.

DB Response #11

Please refer to DB Response #1, 3, and 5.

DB Comment #12

The EA currently fails to, and must be revised to, analyze the cumulative impact of the Proposed Action with past, present and reasonably foreseeable future actions. This should include any potential impacts to individual wild horses or wild horse herds – both physical and behavioral- and the impact to resources utilized by wild horses.

Further, the EA should disclose and analyze the cumulative impacts of other activities that affect wild horses in the area, including livestock grazing, other mining activities, oil and gas

exploration and/or extraction operations, etc. The EA must disclose, consider and analyze all permitted activities within the affected areas in order to determine the current stress on the public lands at issue.

DB Response #12

Cumulative impacts specific to Wild Horses and Burros are disclosed in Section 4.3.16 of the document. Cumulative impacts associated with past, present and reasonably foreseeable future actions are considered in Section 4 of the document.

Dr. Bonnie Eberhardt Bobb (BEB)

BEB Comment #1

The Cumulative Impacts section (Section 4.0) is completely insufficient. Air quality impacts and water quality impacts do not even take into effect the continued and worsening drought predictions.

BEB Response #1

The intent of the cumulative impacts section of the document is to disclose the collective impact associated with past, present, and reasonably foreseeable future actions, including the Proposed Action and No Action alternative. The existing condition to which you refer is described in section 3.4.5 Water Quality (Surface and Ground) and Quantity, Affected Environment.

BEB Comment #2

In the Cumulative Impact, this is not combined with extensive mining dewatering from the Carlin Trend and the growing Round Mountain Gold mine facility. Nor is it combined with agricultural water use or water necessary for vegetation, forest and wildlife. The Las Vegas groundwater project is temporarily on hold, but the future of that project is uncertain.

BEB Response #2

The impacts from the proposed, ongoing, and reasonably foreseeable actions do not appear to have an incremental effect on any area of the CESA because the total water use in the area is minimal and is exceeded by the recharge volumes on an annual basis. Furthermore, site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

BEB Comment #3

Please provide projections of how far residential and agricultural water levels will drop in Smokey Valley.

BEB Response #3

There are no impacts to water levels as a result of leasing. However, site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

Frank Whitman (FW)

FW Comment #1

The decisions regarding listing sage grouse should be made first, then figure out whether and how fracking exploration is to proceed. This document does not cover well enough things like noise abatement or habitat fragmentation.

FW Response #1

Parcels were deferred because they contain potential habitat for 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife biologists), 3) bighorn sheep lambing areas, and/or 4) significant water resources (e.g., (e.g., shallow ground water, wetlands, perennial streams, springs, and seeps and wet meadows). In addition, this EA does not address or authorize any ground disturbance

Sherry Oster (SO)

SO Comment #1

The oil/gas lease sale proposal must address the following points of concern in order to comply with the mandates of the National Environmental Policy Act: Questions and concerns regarding water use (quantity and quality), analysis of all water uses, cumulative impacts analysis of water uses, impacts to local agriculture, impacts to local communities (including socio-economic impacts), taxpayer investments in infrastructures that ultimately benefit private corporations, In impacts to ALL wildlife, including aquatic species, evaluate all alternatives, provide and evaluate a NO ACTION ALTERNATIVE, What are the short and long term and cumulative impacts on the ground and sub-surface water quantity and quality?, What amount of water that will be used and/contaminated due to fracking? Where will the water come from? Where and how will water disposal be handled after use? How will contaminated water be recycled after use? What are the negative impacts to groundwater supplies? From which aquifers will the water be taken? The public must be given, in clear and concise language, measures that will be implemented to enforce rules that protect and govern use of Public Lands.

SO Response #1

Please refer to DB Response #3.

Johnnie L. Bobb, Chief
Western Shoshone National Council
Western Shoshone Nation (JB)

JB Comment #1

The Western Shoshone National Council has not been consulted regarding this project and opposes it.

JB Response #1

The BLM would like to take this opportunity to thank the Western Shoshone Nation Council and Western Shoshone Nation for their input. After further consultation with the Bureau of Indian Affairs it has been determined that the council and nations (as identified) are not federally recognized tribes. Please see 1.5 and 3.4.3 for consultation that was conducted with the recognized tribes.

Patsy Waits (PW)

PW Comment #1

My second concern is the fact that Nevada is only now completing the statutes regarding hydraulic fracturing, and they will not be in effect until the Nevada Legislature meets and approves them next year. This leaves 230,898 acres in Lander and Nye Counties at the mercy of the Oil and Gas companies and totally unprotected with no government oversight, controls or regulations.

PW Response #1

Thank you for your comment and the BLM will continue to follow developments in the State of Nevada that pertain to the safeguarding of the environment with regard to “fracking”.

PW Comment # 2

The third concern is AB 227 bill which the Nevada Legislature will be considering next session, and this sale/lease of the Public Lands is a key issue.

PW Response #2

BLM will continue to manage the public lands under the principle of multiple use and sustained yield. The parcels have been declared open for oil and gas exploration and development by existing land use plans and the BLM is bound by laws to make them available for lease.

Marybeth Devlin (MD)

MD Comment #1

The EA proffers just two alternatives-to lease or not to lease. Usually life is not so either-or, black or white. A true environmental assessment, even a preliminary one, should present a full range of viable options. Recommendation: The EA must provide a variety of alternatives, each of which should be well-reasoned.

MD Response #1

Actually a third alternative was considered: The leasing of all 166 parcels. This alternative was not analyzed in detail due to the sage grouse habitat and specific land use conflicts. With regard to whether or not to lease, the BLM is required by law to consider leasing of areas that have been nominated for lease if leasing is in conformance with the BLM land use plan. The nominated parcels were declared open for oil and gas exploration and development during a public land use planning effort.

MD Comment #2

Actually the choice is clear. Select the "No Action" alternative already. Or better yet, rescind the EA. Don't waste anymore effort on considering whether to destroy the fragile, arid environment of the Battle Mountain District by drilling and fracking it.

MD Response #2

Thank you for your comment.

MD Comment #3

Of the 138 parcels slated for auction, 13 of them overlap, in whole or in part, with the four HMAs listed below. In addition, four of the 13 parcels in question are next to a WHT, violating the requirement for a buffer zone to avoid disturbances.

MD Response #3

See response #1 to the AWHPC responses, as well as DB #1 and #3. Please note that the BLM has recommended 7 parcels located in HMAs for deferral.

MD Comment #4

These parcels constitute only ten percent of the total. Removing them will not make all that much difference to the auction, but will make a world of difference to the wild horses.

MD Response #4

See response #1 to the AWHPC responses.

MD Comment #5

I acknowledge that BLM plans to attach stipulations to the leases to help protect resources. However, stipulations do not – indeed they cannot-prevent adverse impacts.

MD Response #5

Impacts from exploration and/or development activities would be analyzed under a separate site-specific environmental analysis.

MD Comment #6

There's no escaping the fact that oil-and-gas exploration and production are, by their very nature, incompatible with wild horse HMAs/WHT. Such projects cause major disturbances.

MD Response #6

Please refer to DB #1 and #3.

MD Comment #7

BLM must reconfigure the 13 parcels at issue to eliminate those portions located within HMAs/WHT and within a four-mile-wide buffer zone around those HMAs/WHT. HMAs and WHTs must be designated "No Surface Occupancy" (NSO) zones.

MD Response #7

There is no requirement in the WFRHBA, Code of Federal Regulations, or other policy to implement four-mile buffers around HMAs or WHTs or to designate them for NSO. All of the parcels at issue have been declared open for oil and gas exploration and development by a land use plan decision. However, BLM has recommended 7 parcels located in HMAs for deferral (Response #1 of the AWHPC responses).

Site-specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site-specific NEPA document.

MD Comment #8

Although the EA says that seismic testing will be conducted as part of the exploration phase, no mention is made of seismic activity caused by injecting fracking waste fluids wastes underground. This method of disposal increases pressure on seismic faults and makes them more likely to slip. The resulting tremors are called "induced" quakes.

MD Response #8

The study that formed the basis of the Bloomberg article has not proven the linkage between water injection and the occurrence of earthquakes. According to a Department of the Interior website http://www.doi.gov/news/doinews/Is-the-Recent-Increase-in-Felt-Earthquakes-in-the-Central-US-Natural-or-Manmade.cfm , there have been no conclusive examples linking wastewater injection activity to triggering of large, major earthquakes even when located near a known fault.

MD Comment #9

Using the argument that a lease does not directly authorize exploration and development, the EA failed to properly analyze the impact that drilling and fracking would have [on a variety of resources].

MD Response #9

This EA does not address or authorize any ground disturbance that could potentially impact important resources. Site specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site-specific NEPA document. Please refer to DB #1 and #3.

MD Comment #10

The EA downplays the potential for active fluid mineral development, stating that most leases are never used---*that is unless a major reserve is discovered.* While such might have been the case historically, rapid technological and engineering advances have made previously uneconomical sites accessible.

MD Response #10

A site-specific environmental evaluation of any proposal associated with oil and gas exploration and development would be conducted prior to its potential approval, regardless of the technology. If the impacts associated with a given proposal are deemed unacceptable, appropriate mitigation would be proposed or the proposal may be denied to prevent unnecessary or undue environmental degradation.

MD Comment #11

Class III (moderate value) and Class IV (low value) visual resources are said to be found among the parcels slated for the proposed lease-sale. However, no information is given as to how many are Class III and how many are Class IV.

MD Response #11

Regardless of the visual resource class designation, oil and gas exploration and development activities would be managed to minimize the visual impact. Potential methods to reduce impacts to visual resources on public lands include, moving drill site locations up to 200 meters, use of low profile tanks, coloring facilities and equipment, road alignment, reducing the size or changing the configuration of drill pads, and utilizing topographic features to visually screen facilities.

There are six parcels that are located in VRM Class III and the remaining parcels are in VRM Class IV. Section 3.4.13 of the EA has been updated.

MD Comment #12

While the article and the report are excellent sources that cite an abundance of references, it would have been better for the EA to have examined the original research documents to evidence that BLM had conducted its own analysis of the risk that fracking chemicals pose to drinking water supplies, hazardous air-pollutants released in the fracking process, disposition of carcinogenic, radioactive, and otherwise toxic substances, lack of staff to conduct compliance monitoring and the ramifications of well casing failures.

MD Response #12

Such documents would be reviewed as part of any site-specific environmental evaluation conducted for each oil and gas exploration and development proposal submitted by industry. If the evaluation indicates that environmental impacts would be unacceptable, either mitigation measures would be implemented to reduce the impact or the proposal could be denied to prevent unnecessary or undue degradation.

MD Comment #13

I urge the BLM-Battle Mountain District to publish the number of persons that respond to the subject EA.

MD Response #13

Of the approximate 5,100 comment letters received, about 4,980 were identical form letters which yielded 3 distinct comments and were addressed under the AWHPC responses above. Refer also to DB#2.

Katie Fite, Western Watershed Project (KF)

KF Comment #1

An EIS is essential to address the great many rare species concerns, ground and surface water concerns, and the full environmental footprint of this activity-combined with the effects of grazing, mining, and potential other energy development. The stipulations proposed are not able to prevent undue degradation.

KF Response #1

A site-specific environmental evaluation would be conducted for each oil and gas exploration and development proposal submitted by industry. If the evaluation indicates that environmental impacts would be unacceptable, either mitigation measures would be implemented as conditions of approval (COAs) to reduce the impact or the proposal could be denied to prevent unnecessary or undue degradation.

Following the public comment period, the BLM protected critical water, wildlife and fish resources by deferring several parcels. The BLM has chosen to move forward with the Oil and Gas Lease Sale EA because the combination of stipulations consistent with current RMPs and parcels proposed for deferral afford sufficient protection to important wildlife and water resources. Stipulations consistent with the current RMP include timing restrictions on development within mule deer winter habitat. Parcels were deferred because they contain potential habitat for 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife biologists), 3) bighorn sheep lambing areas, and 4) significant water resources (e.g., shallow ground water, wetlands, perennial streams, springs, and seeps and wet meadows).

KF Comment #2

We are alarmed at the degree to which BLM is sacrificing lower elevation sagebrush and salt desert communities that are critical to many rare species, including sage sparrow, loggerhead shrike, burrowing owl and other BLM sensitive species. What parcels do these species occur on? All of the affected parcels should be removed from leasing.

KF Response #2

Inventories would be conducted and addressed during the site-specific environmental evaluation phase.

KF Comment #3

BLM must fully consider the status, rate, degree of depletion, and stresses on aquifers across this landscape prior to issuing any leases.

KF Response #3

Potential impacts to groundwater by the development of a lease may include degradation of water quality and drawdown of existing water levels. Areas with shallow groundwater levels would be at greater risk and may be subject to additional constraints. All required state and federal regulations would apply and site-specific stipulations and mitigation may be applied on the APD.

In addition, were deferred if they contained potential habitat for 1) SSS fish species, and 2) significant water resources (e.g., shallow ground water, wetlands, perennial streams, springs, and seeps and wet meadows).

KF Comment #4

What effects would oil and gas fracing have on ground waters, surface expressions of springs?

KF Response #4

See response #3 to your comments.

KF Comment #5

Where are any potential restoration or other sage-grouse habitats Where are all pygmy rabbit habitats, and what surveys have been conducted?

KF Response #5

Preliminary Priority Habitat (PPH) and high quality Preliminary General Habitat (PGH) for greater sage grouse were eliminated from leasing consideration. Surveys for pygmy rabbit habitat would be conducted during the site-specific environmental evaluation of individual project proposals.

KF Comment #6

Have you conducted surveys for Lands with Wilderness Characteristics?

KF Response #6

Yes. A survey for Lands with Wilderness Characteristics (LWC) was conducted as part of the development of the Battle Mountain District RMP revision. A comparison of the parcel locations with the LWC layer revealed that none of the parcels are located within or near lands that were considered to have wilderness characteristics.

KF Comment #7

The full array of adverse direct, indirect, and cumulative effects must be considered-including existing and foreseeable mining degradation and impairment, depletion of ground and surface waters, destruction, loss and degradation of sensitive species habitat.

KF Response #7

A site-specific environmental evaluation would be conducted for each oil and gas exploration and development proposal submitted by industry. If the evaluation indicates that environmental impacts would be unacceptable, either mitigation measures would be implemented as conditions of approval (COAs) to reduce the impact or the proposal could be denied to prevent unnecessary or undue degradation.

In addition, several parcels were deferred following the public comment period because they contain potential habitat for 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife biologists), and 3) bighorn sheep lambing areas.

KF Comment #8

Without conducting intensive detailed site-specific surveys for all sensitive species presence and habitat, cultural resources, water levels, etc.-BLM cannot ensure minimization, or optimization.

KF Response #8

For each Application for Permit to Drill (APD) submitted by industry, a site-specific analysis would be conducted which would include surveys for sensitive species, cultural resources and evaluate water levels based on available data.

Kathleen Gregg

KG Comment #1

<u>The oil/gas lease/sale must address the following points completely:</u>

Analyze all water project impacts and do a cumulative impacts analysis, assure a transparent process which uses public and peer reviewed data and scientific models, account for all existing water uses including those for existing users, springs, seeps, rivers, and creeks, compute the true cost (including financing costs) for the project, risks to agricultural irrigation water and recreational water and wildlife water and domestic water, increased air pollution that would negatively affect the general area and the wilderness areas in the vicinity of the projects, likelihood of increased water pollution that would negatively affect the general area and the wilderness areas in the vicinity of the project, including all wildlife in the area, negative effects including traffic and heavy equipment accidents on the wildlife in the area, increased dust, increased risk of accidents, and congestion to the visitors of the public land, noise (horns, rumbling, etc.) due to equipment and operation in general, the effects of heavy equipment on air

quality and human health, taxpayer investment in infrastructures and upgrades that ultimately benefit privately held corporations, the effects of degraded environment and /or altered regional identity on cultural and historical values and quality of life, evaluate alternative including but not limited to the *no action*.

KG Response #1

A site-specific environmental evaluation would be conducted at the APD stage for oil and gas exploration and development. If the evaluation indicates that environmental impacts would be unacceptable, either mitigation measures would be implemented as conditions of approval (COAs) to reduce the impact or the proposal could be denied to prevent unnecessary or undue degradation. Please refer also to Response DB #1. #3, #12, and MB #8.

KG Comment #2

I require the BLM to take a "hard look" at as required by the National Environmental Policy Act (NEPA).

KG Response #2

Thank you for your comment.

KG Comment #3

What becomes of the land surface after exploration and/or extraction?

KG Response #3

There are no surface disturbing activities authorized as a result of leasing. However, site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

KG Comment #4

<u>The Lease/Sale proposal must answer the following specific questions in detail:</u>

What are the project impacts on the biodiversity of the area as well as the federal listed, proposed and candidate species? What monitoring is needed and will be used to identify and eliminate adverse impacts on the environment and wildlife, including all water usage involved with the resulting proposed exploration and extraction project? Can the BLM enforce rules on the proponent to eliminate impacts and how will this be accomplished?

KG Response #4

Please refer to DB Response #1 and #3.

KG Comment #5

Additional specific questions/concerns regarding water usage-water quantity and water quality

Where will the water come from for the oil and gas exploration and extraction processing? Where will that water go after being used for exploration, extraction and processing? What degree of contamination will this water have after usage-especially the fracking process? How will the water usage effect the environment above ground as well as the entire aquifer? Who owns this water that will be required for drilling and fracking? How will the used water be disposed of and how will that effect the environment above ground as well as the aquifer? Which aquifers will this water be taken from and how is it expected to impact the aquifer, including springs and seeps, in the near future (active life of the exploration and extraction project) and far future (after the extraction activities have concluded)?

KG Response #5

Please refer to DB Response #1 and #3.

KG Comment #6

"I request that the Bureau of Land Management (BLM) Battle Mountain District "2014 Oil & Gas Lease Environmental Assessment be amended to withdraw from nomination the following 13 parcels in order to ensure that federally protected wild horses will not be potentially harassed, disrupted or displaced: 156-158, 152-155, 161-163, 165-166 and 114.

KG Response #6

Please refer to AWHPC response #1.

KG Comment #7

"Wild horses from four Herd Management Areas (HMAs) and one Wild Horse Territory (WHT) would be negatively impacted by the currently proposed parcels being made for lease auction".

KG Response #7

Please refer to DB Response #1 and #3.

KG Comment #8

"In addition to the disruption and lost habitat resulting from potential leasing of the parcels, hydraulic fracturing for natural gas and oil extraction requires an enormous amount of water. In these times of drought, when the BLM is taking about the need to remove even more horses from the range due to drought conditions, HMA and WHTs must be protected from extractive uses…"

KG Response #8

Please refer to DB Response #1 and #3.

KG Comment #9

Cumulative impacts to wild horses from oil and gas leasing would consist of the impacts occurring as a result of exploration and production which would occur in the lease/sale areas. Cumulative Effects Study Area (CESA) for wild horse and burro management must include the HMAs in which the leases are located as well as those HMAs adjoining the affected HMAs.

KG Response #9

As indicated in Section 4.3.16, Cumulative Effects on Wild Horse and Burros, the CESA for wild horse and burro management would include the HMAs in which the leases are located as well as those HMAs adjoining the affected HMAs.

Joan Grove, Sharon James, Lori Schmidt, Sasha Shapiro and Puller Lanigan (variant of form letter)

JG Comment #1

We encourage the use of the phase "**As data to support amendments to any agreements on exploration and production is gathered that effects the management of wild horse and burros, exploration or production will be altered or halted at anytime"** be generously used in any documents created that could have any potential impact on wild horse and burro populations in the short or long term.

JG Response #1

A site-specific environmental evaluation would be conducted for each oil and gas exploration and development proposal submitted by industry. If the evaluation indicates that environmental impacts would be unacceptable, either mitigation measures would be implemented as conditions of approval (COAs) to reduce the impact or the proposal could be denied to prevent unnecessary or undue degradation.

JG Comment #2

In light of the aforementioned deferments, we request the following parcels that could create a disturbance within HMS be deferred: (List of parcels).

JG Response#2

The parcels described have been declared open for oil and gas leasing by Resource Management Plan (RMP) decisions. In order to withdraw the parcels, it would be necessary to amend the

current RMPs though a public process, which is beyond the scope of this EA. Please note that the BLM has recommended 7 parcels located in HMAs for deferral.

Cathy Purves and Jim Jeffress, Trout Unlimited (CP)

CP Comment #1

Lease sales should be stayed during revision of the Resource Management Plan.

CP Response #1

BLM did a second review of RMP backed lease stipulations, Federal regulations relevant to each resource, and the natural resources within each parcel. If the interdisciplinary team determined that Federal regulations and RMP backed stipulations were insufficient to protect the resources, the parcels were recommended for deferral. As a result, twenty-four additional parcels were deferred. Parcels were deferred because they contain potential habitat for 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife biologists), 3) bighorn sheep lambing areas, and/or 4) significant water resources (e.g., (e.g., shallow ground water, wetlands, perennial streams, springs, and seeps and wet meadows). In addition, this EA does not address or authorize any ground disturbance that could potentially impact important resources. Site specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site specific NEPA document.

CP Comment #2

Basing leasing decisions on information and assumptions that have changed dramatically over the last 25 years should not be relied on in making sound land management decisions.

CP Response #2

Please refer to CP response #1.

CP Comment #3

New impacts will arise that are not addressed in either RMP……a brief list of new impacts includes:

- Increased water pollution issues caused by spills and secondary oil and gas activities
- Use of water resources that deplete a valuable groundwater system
- Threats to sensitive and threatened species such as Lahontan Cutthroat Trout
- Increases in fish kills and habitat degradation due to the increase in oil and gas drilling near water bodies which have resulted in contamination of habitats
- Sage grouse are now considered a species of significant value with the US Fish and Wildlife Service identifying them as warranted for listing and requiring state level management plans

- New research shows that oil and gas activities significantly impacts big game habitat and the species population
- Air emission issues that threaten Nevada's air quality

CP Response #3

Please refer to CP response #1 for issues concerning LCT, SSS fish, sage-grouse, and big game. For issues relating to groundwater and air quality, the RMP is not designed for project specific analysis, but rather sets forth guiding principles to which the land will be managed. Although the existing RMPs are dated, they specifically guide the BLM on Oil and Gas leasing. Water and air resources are protected by State and Federal regulations. Furthermore, site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

CP Comment #4

Should the BLM decide against deferring all lease parcels, pending the completion of the RMP, then we ask for those specific parcels that are located near streams, creeks, and springs be deferred.

CP Response #4

Following the public comment period, the BLM performed a second review of the lease parcels and identified all parcels that contain the aforementioned resources for deferral.

CP Comment #5

……as discussed under the policy/action section of IM 2010-117. We saw no reference to this document and ask that the BLM provide a more updated reference to it and how it will provide the required lease stipulation reviews.

CP Response #5

The BMDO acknowledges that the current Tonopah and Shoshone-Eureka RMPs do not contain analyses of new information addressing contemporary resources issues. In light of the fact that the BMDO is in the process of writing a new district-wide RMP and several resources were not protected by stipulations consistent with our current RMPs, in accordance with IM 2010-117 the BMDO recommended for deferral, parcels that contained key resources (e.g., parcels with shallow ground water, wetlands, perennial streams, springs, seeps and wet meadows, areas containing SSS fish species, areas with important big game habitat, and sage-grouse habitat).

CP Comment #6

The IM calls for the formation of an interdisciplinary team (IDPR-section III-c-Interdisciplinary review of Lease Sale Parcels (that includes outside agencies and staff from other BLM field

offices including other states in order to provide the best resource evaluation and experience with oil and gas leasing activities.

CP Response #6

In accordance with the IM, BLM determined that it was not appropriate to includes outside agencies and staff from other BLM field offices or other states, in preparing the EA for this lease sale. (see Section 5.2 Agencies / Tribes Contacted).

CP Comment #7

"…the BLM failed to conduct site visits prior to leasing…

CP Response #7

The BLM formed an ID team and representatives of the team conducted site visits to all parcels that contained sage-grouse habitat, significant water resources, or other significant resources.

Nevada BLM has completed response to the IM. Additional stipulations for Oil and Gas will be included in the Battle Mountain District Land Use Plan Revision. In the interim, parcels lacking appropriate protection have been deferred.

CP Comment #8

It is astonishing to TU, for instance, that the EA does not mention the occurrence of LCT or any cold water trout habitat in the planning are nor are there stipulations that address protection measures for these fish. The EA also does not identify big horn sheep, elk, or prong horn habitat or stipulations for protecting any of these species habitat, nor does it define raptor stipulations since this area is identified as significant nesting habitat for many species of raptors, as discussed in the letter from NDOW.

CP Response #8

Please refer to CP Response #1.

In addition, protection of LCT and their habitat will be afforded in two ways. First, any future action that potentially threatens LCT or their habitat will be subject to the ESA Section 7 consultation process with the USFWS when terms and conditions of oil and gas exploration and production will be developed to protect LCT.

Second, all parcels were reevaluated by the ID team after the public comment period, and BMDO chose to defer any parcels containing perennial streams with potential LCT habitat or other SSS fish.

CP Comment #9

The EA fails to include any reference to the numerous studies, conducted on "BLM lands, demonstrating the considerable impacts from oil and gas development to big game species, sage grouse species, air quality and water quality.

CP Response #9

Site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

CP Comment # 10

...we are concerned that the stipulations which have been in effect since the mid-1980's are in many cases, no longer protective enough for today's high intensity and expansive level of development. This is evident by the language in the Special Status Fish Species stipulation which describes the occurrence of two species (the Big Smokey Valley Speckled Dace and Big Smokey Valley Tui Chub) but does not explicitly provide a quantitative protection measure, such as a one-quarter mile buffer for instance, that might provide stronger protection measures. Nor does the EA mention the third fish species NDOW has identified as occurring within lease parcels boundaries (Charnock Ranch Tui Chub).

CP Response #10

Please refer to CP response #1 for issues concerning SSS fish. Also, the Charnock Ranch Tui chub was not discussed or analyzed in this EA because the identified distribution of this species does not occur on any parcels identified for sale.

CP Comment # 11

We recommend the EA include a more robust and inclusive discussion on the impacts and trends associated with new drilling completion activities, including hydraulic fracturing.

CP Response # 11

This EA does not address or authorize any ground disturbance that could potentially impact important resources. Site specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site specific NEPA document.

CP Comment #12

There are 14 parcels identified in Appendix B as potentially containing Special Status Fish Species that have some direct location either next to or through identified creeks and streams. We understand that these parcels have stipulations placed on them but as mentioned earlier, we believe they remain weak and ineffective without more descriptive qualities. We ask that those

lease parcels have more specific stipulations, as addressed above, that increase the protective buffer setback. Further, we ask that the BLM include Lahontan cutthroat trout as a Special Status Fish Species in Appendix B and apply the same type of stipulations.

CP Response #12

Please refer to CP Response #1,. In addition, Lahontan cutthroat trout are included as a Special Status Fish Species list in Appendix D.

CP Comment #13

The following stipulations should be added to any lease that meets the above description for the July sale, should it proceed, and for all future lease sales within the Battle Mountain planning area:

- NSO stipulation with a recommended buffer width of one-quarter mile to any LCT habitat, including expansion and historic habitat
- Implementation of one-quarter mile buffer on all perennial streams and springs
- Implementation of a minimum of a 500-foot buffer to important intermittent and ephemeral drainages that the EA has addressed as valuable during spring and summer rain events.

Requirements for baseline water sampling prior to any type of exploration of development when activities are located within one-mile of a surface water source of groundwater source.

CP Response #13

Please refer to CP Response #1. In addition:

Lease stipulations for LCT streams or other SSS Fish are unnecessary in this EA because parcels that contain occupied or potential stream segments occupied by these species have been recommended for deferral. The recommendation for deferral was made following the public comment period.

Moreover, any future action that threatens LCT will be subject to the ESA Section 7 consultation process with the USFWS, and appropriate Terms and Conditions. For LCT, these Terms and Conditions would typically include USFWS approved buffer widths surrounding occupied streams. COAs will be developed on a site specific basis at the APD stage and include protections similar to those proposed by Trout Unlimited.

CP Comment #14

Lack of analysis of impacts for fisheries and watersheds

CP Response #14

Please refer to CP Response #1.

CP Comment #15

The EA contains little if any discussion on increasing protective measures for important surface and groundwater resources.

CP Response #15

For surface water resources, please refer to CP Response #1. Groundwater resources are protected by State and Federal regulations. Furthermore, site-specific analysis, mitigation measures, and BMPs would be attached as COAs for future exploration and development activity conducted under APDs, which would be analyzed in a site-specific NEPA document.

CP Comment #16

As earlier discussed, TU supports applying buffers as stipulations to leases.

CP Response #16

Pleases refer to CP Response #1.

CP Comment #17

The EA Fails to Adequately Protect Big Game Crucial Habitat

CP Response #17

Please refer to CP Response #1 and #18.

CP Comment #18

NDOW has identified pronghorn and bighorn sheep as also occupying critical habitat areas where lease parcels are being offered. We suggest BLM include a discussion of impacts to all big game species occurring in this area and include protective stipulations as well.

CP Response #18

Please refer to CP response #1.

CP Comment # 19

BLM must include analysis that considers the potential effects on public health and safety from hydraulic fracturing operations, including air quality, oil spills, water contamination, and water

shortages. The BLM's reliant on the current RMP as being adequate for such analysis is incorrect. A decision in a recent court case (Center for Biological Diversity v Bureau of Land Management., No. C 11-06174 PSG March 31, 2013) found that the BLM was required to ….conduct a more detailed NEPA analysis to determine whether the sale of the parcels would have a substantial environmental impact." Citing uncertainties about hydraulic fracturing can no longer be BLM's excuse for not including further analysis of the practice.

CP Response #19

While the State of Nevada may not have current statutes, the BLM is mandated by the Federal Land Policy and Management Act (FLPMA) to prevent unnecessary or undue degradation of the public lands as mandated by the FLPMA and the Department of Interior's regulations at 43 CFR 3160 which defines a wide array of rules which govern the conduct of Onshore Oil and Gas operations. Nor are any potential proponents wishing to operate on public lands exempt from the NEPA which requires the public disclosure of potential environmental effects of a proposal prior to approval.

CP Comment #20

Many of the parcels in this lease sale are located in crucial winter habitat for mule deer and have timing limitations applied as stipulations. While we support BLM applying these restrictions, they are very limited in that they only apply for the development phase and not the operations or maintenance phase (i.e.., the production phase).

CP Response #20

The Oil and Gas Sale EA does not address or authorize any ground disturbance that could potentially impact important resources that would require reclamation. Crucial habitat will be addressed at the APD stage. Site specific analysis would be conducted to evaluate if mitigation measures and BMPs are necessary as COAs for each proposed activity, which would be analyzed in a site-specific NEPA document.

CP Comment #21

Since adequate setbacks along riparian and stream areas are not addressed, there is a lack of sufficient protection efforts to prevent water contamination. TU suggests that the Battle Mountain District office error on the side of caution. And establish stronger leasing stipulations for water protection which protect not just the environment, but the industry as well.

CP Response #21

Please refer to response CP #1.

CP Comment #22

The EA Lacks a Robust Reclamation Discussion

CP Response #22

The Oil and Gas Sale EA does not address or authorize any ground disturbance that could potentially impact important resources that would require reclamation. Reclamation will be addressed at the APD stage. Site specific analysis would be conducted to evaluate if mitigation measures and BMPs are necessary as COAs for each proposed activity, which would be analyzed in a site specific NEPA document.

CP Comment #23

Insufficient Cumulative Impacts Discussion

CP Response #23

The Oil and Gas Sale EA does not address or authorize any ground disturbance. The analysis at this stage is broad in scope. Therefore, any discussion of specific cumulative impacts is speculative at this stage. Site specific analysis would be conducted to evaluate if mitigation measures and BMPs are necessary as COAs for each proposed activity, which would be analyzed in a site-specific NEPA document.

CP Comment #24

…cumulative analysis on the impacts to fisheries. There is no mention of any fisheries discussion.

CP Response #24

Please refer to CP Response #1. Furthermore, the Oil and Gas Sale EA does not address or authorize any ground disturbance. Therefore, any discussion of cumulative impacts is speculative at this stage. Moreover, any future action that threatens LCT (the only federally listed fish species on the project area) will be subject to the ESA Section 7 consultation process with the USFWS, and appropriate Terms and Conditions.

Rob Mrowka, Center for Biological Diversity (RM)

RM Comment #1

BLM has unlawfully restricted its NEPA analysis by arbitrarily limiting the oil and gas activity that may result from the lease sale and by failing to analyze sufficiently site-specific impacts.

RM Response #1

The level of environmental analysis conducted for this lease sale is consistent with the purpose and need for the action. The amount of oil and gas activity projected to occur is based on a Reasonably Foreseeable Development Scenario (RFD) developed in the existing land use plans. Since there are currently no proposals to conduct oil and gas exploration and development

activity associated with the EA, it is not possible to conduct a realistic site-specific analysis. A site-specific analysis will be conducted once a proposal, typically an Application for a Permit to Drill (APD), is received.

RM Comment #2

BLM Failed to take a hard look at potential impacts or to adequately disclose or analyze the project's impacts to water resources.

RM Response #2

Potential site-specific impacts to water resources cannot be well-analyzed at the lease sale stage because the sale area is large and the BLM does not know which specific parcels will be sold. Moreover, the BLM does not know the specific locations within parcels that will be proposed for gas or oil development, nor does it know the methods of exploration or extraction to be used (for example, fracking, on/off site water). In fact, the Oil and Gas Lease Sale EA does not authorize any ground disturbance that could potentially impact water resources. Thus, this EA cannot provide a robust, detailed analysis of potential impacts to water resources. Instead, site specific analysis, mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be analyzed in a site specific NEPA document.

To reduce potential conflicts with water resources from future oil and gas projects, however, the BMDO ID team evaluated all parcels within the lease area for the presence of high-value habitat for significant water resources. Parcels were intensively scrutinized following the public comment period. As a result, the BMDO ID team proposed to defer an additional 24 parcels containing significant water resources (e.g. shallow ground water, wetlands, perennial streams, springs, seeps and wet meadows, areas containing SSS fish species). These include areas of important big game habitat, perennial streams with SSS fish species, and areas with a high density of important water resources.

RM Comment #3

BLM has Failed to Adequately Analyze Air Pollution Impacts

RM Response #3

The Oil and Gas Leasing EA does not authorize any surface disturbing activities that would have an effect on air quality. However, any subsequent requests for exploration or development would include site specific analyses which would account for potential impacts to air quality.

RM Comment #4

BLM has Failed to Analyze Adequately the Project's Climate Change Impacts

RM Response #4

Since the Oil and Gas Leasing EA does not authorize any surface disturbing activities at this stage there would be no potential effects to climate change. Therefore, this EA cannot provide a robust, detailed analysis of potential impacts to climate change. Instead, site specific analysis, mitigation measures, and BMPs could be attached as COAs for each proposed activity, which would be the result of analysis performed in a site specific NEPA document.

RM Comment #5

The EA Fails to Provide a Sufficient Analysis of Impacts to Sensitive and ESA Candidate Species.

RM Response #5

Rather than site-specific analyses, this EA 1) discloses a list of SSS that could occur on the parcels, 2) provides stipulations that are consistent with our current RMPs (Shoshone-Eureka and Tonopah), 3) describes general wildlife survey protocols to be conducted prior to subsequent NEPA, and 4) explains our methods and rationale for deferring parcels within important sage-grouse habitat.

To reduce potential impacts to wildlife, the BMD also deferred parcels that are known to contain habitat for SSS fish and wildlife, and contained important habitat for a wide variety of wildlife species. These include all parcels that may contain 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife biologists), and 3) bighorn sheep lambing areas. In addition, several parcels were deferred because they contained (or were adjacent to) perennial streams, a high density of riparian habitat, or uplands important to mule deer and other wildlife.

RM Comment #6

BLM failed to provide analysis of impacts to sensitive species known to inhabit the proposed lease area. . . In addressing other sensitive species, the BLM simply attaches a laundry list of all such species found on the BMD, for the most part with no effort made to identify the likely species to be impacted, outside.

RM Response #6

Please refer to RM Response #5.

RM Comment #7

The EA's laundry list of sensitive species in Appendix B is incomplete, and fails to mention the known presence of the Big Smokey Valley wood nymph… and the pallid wood nymph…

RM Response #7

Comment noted. The SSS list has been updated to include these insects.

RM Comment #8

What it does not say is that many of the proposed lease parcels are adjacent to leks and PPH and would have serious impacts on the quality of the PPH and survival of the grouse. (Page 19)

RM Response #8

The BLM describes criteria for deferring parcels within or near sage-grouse habitat in MLFO (see explanation for deferral criteria). One of the criteria is that any parcel within 4 miles of an active sage-grouse lek would be deferred. Four miles is considered to be an adequate buffer surrounding leks for disturbance activities (research in Wyoming on oil and gas fields shows this is a viable standard for grouse), and this standard has been adopted by several land management agencies. Although deferral standards described for parcels within TFO do not state that the 4 mile criterion was used, none of the TFO parcels were within 4 miles of a lek.

RM Comment #9

BLM has Failed to Adequately Disclose or Analyze the Impacts to Sage Grouse

RM Response #9

Prior to forwarding the nominated parcels to the Battle Mountain District, the BLM Nevada State Office eliminated those parcels located in sage grouse priority habitat. In addition, field visits were conducted to ensure that no parcels located in important sage grouse habitat would be considered for leasing and parcels located within 4 miles of sage grouse leks were deferred. Preliminary Priority Habitat (PPH) and high quality Preliminary General Habitat (PGH) for greater sage grouse were eliminated from leasing consideration.

RM Comment #10

The EA fails to discuss the need for “lease timing stipulations” for parcels near leks, nesting areas and winter range, nor the need for adequate buffers around active leks.

RM Response #10

Despite the fact that neither the TFO RMP, nor the SE RMP allow for lease timing stipulations, in response to comments received, BLM reevaluated all nominated parcels and chose to defer additional parcels that contained quality sage-grouse habitat (including winter and nesting range), or were within 4 miles of a lek. Conditions of Approval relating to timing limitations may be implemented, however, if it is determined upon site-specific analyses conducted at the APD stage, that a parcel is used by grouse, within important habitat, or adjacent to a previously unknown lek.

RM Comment #11

The BLM Failed to Adequately Disclose or Analyze the Project's Impacts to Wetlands and Riparian Zones.

RM Response #11

Please refer to RM response #2 and CP response #1.

RM Comment #12

The BLM Failed to Adequately Disclose or Analyze the Project's to the Geologic Stability of the Project Area

RM Response #12

The Oil and Gas Leasing EA does not authorize any activities that would affect the geological stability of the project area. Potential impacts to geologic stability would be addressed in a site-specific NEPA document once an APD is received.

RM Comment #13

BLM Must Prepare an EIS

RM Response #13

The Oil and Gas Leasing EA has determined that there would be no significant environmental impacts associated with leasing parcels within the study area. If it is determined at the site-specific level that significant environmental impacts could occur from implementing a proposal, the BLM could contemplate an EIS at that time.

RM Comment #14

Here, the lease sale could result in significant impacts to petitioned species, in particular the greater sage grouse, a candidate species.

RM Response #14

Parcels with important sage-grouse habitat (e.g., PPH, and PGH < 4 miles of a lek, near wet meadows and other riparian areas, or containing quality sagebrush habitat, areas with sage-grouse sign) were deferred. These deferrals substantially reduce any likelihood that oil and gas development (should it occur following the lease sale) would have a significant impact on grouse.

RM Comment #15

BLM's Proposed Lease Sale Violates the Mineral Leasing Act Because it does not Require that Lessess take all Reasonable Precautions to Prevent the Waste of Natural Gas.

RM Response #15

Please refer to section 1.4, Relationship to Statutes, Regulations, Policy, Plans and Other Environmental Analysis of the EA.

RM Comment #16

BLM has Violated FLPMA by Failing to Require the Conservation of Natural Gas

RM Response #16

The reasonable requirement to conserve natural gas would be made at the site-specific APD level.

Susan Jamerson (SJ)

SJ Comment #1

The other rancher and land owners located between Yomba and Austin as well as the Smoky Valley, Kingston, and the Round Mountain areas were not directly notified of the proposal…I am also deeply concerned about the lack of notice given to other government agencies who share jurisdiction to parcels included in this proposed lease sale.

SJ Response #1

A primary goal of public involvement is to ensure that all interested and affected parties are aware of the proposed action. For this EA, public notice was provided on the BLM website, through press releases and an extensive mailing list.

SJ Comment #2

This region is prime Sage Grouse habitat and I have seen them all along the Reese River. As a protected species more habitat needs to be set aside for them and I don't feel the proposed lease sites have been properly assessed for the potential impacts on the Sage Grouse.

SJ Response #2

Stipulations consistent with the current RMP include timing restrictions on development within mule deer winter habitat. Parcels were deferred because they contain potential habitat for 1) SSS fish, 2) sage-grouse PGH in suitable habitat (as determined by field visits by BLM wildlife

biologists), 3) bighorn sheep lambing areas, and 4) significant water resources (e.g., shallow ground water, wetlands, perennial streams, springs, and seeps and wet meadows).

SJ Comment #3

I am deeply concerned by the almost non-existent proof that parcels do not contain cultural artifacts or religious significance to the Shoshone tribes in this area.

SJ Response #3

Please refer to Section 3.4.3, Native American Religious Concerns, furthermore 3.4.2 Cultural Resources has been updated based on public comments.

BUREAU OF LAND MANAGEMENT
Nevada State Office

Appendix F

Hydraulic Fracturing White Paper

This White Paper on hydraulic fracturing is derived from the Hydraulic Fracturing White Paper (BLM 2013) written and developed by the Bureau of Land Management, Wyoming State Office. It has been modified to meet the criteria for the State of Nevada.

I. BACKGROUND

Hydraulic fracturing (HF) is a well stimulation process used to maximize the extraction of underground resources – oil, natural gas and geothermal energy. The HF process includes the acquisition of water, mixing of chemicals, production zone fracturing, and HF flowback disposal.

In the United States, HF has been used since the 1940's. Early on, the HF process utilized pressures that are of a much smaller magnitude than those used today.

The HF process involves the injection of a fracturing fluid and propping agent into the hydrocarbon bearing formation under sufficient pressure to further open existing fractures and/or create new fractures. This allows the hydrocarbons to more readily flow into the wellbore. HF has gained interest recently as hydrocarbons previously trapped in low permeability or "tight" sand and shale formations are now technically and economically recoverable. As a result, oil and gas production has increased significantly in the United States.

Prior to the development of HF in hydrocarbon bearing tight gas and shale formations, domestic production of conventional resources had been declining. In response to this decline, the federal government in the 1970's through 1992, passed tax credits to encourage the development of unconventional resources. It was during this time that the HF process was further advanced to include the high-pressure multi-stage HF operations being conducted today.

Generally, HF can be described as follows:

1. Water, proppant, and chemical additives are pumped at extremely high pressures down the wellbore.

2. The fracturing fluid is pumped through perforated sections of the wellbore and into the surrounding formation, creating fractures in the rock. The proppant holds the fractures open during well production.

3. Company personnel continuously monitor and gauge pressures, fluids and proppants, studying how the sand reacts when it hits the bottom of the wellbore, slowly increasing the density of sand to water as HF progresses.

4. This process may be repeated multiple times, in "stages" to reach maximum areas of the formation(s). The wellbore is temporarily plugged between each stage to maintain the highest fluid pressure possible and get maximum fracturing results in the rock.

5. The plugs are drilled or removed from the wellbore and the well is tested for results.

6. The pressure is reduced and the fracturing fluids are returned up the wellbore for disposal or treatment and re-use, leaving the sand in place to prop open the fractures and allow the oil/gas to flow.

II. OPERATIONAL ISSUES

Wells that undergo HF may be drilled vertically, horizontally, or directionally and the resultant fractures induced by HF can be vertical, horizontal, or both. Wells in Nevada (NV) may extend to depths greater than 10,000 feet or less than 1,000 feet, and horizontal sections of a well may extend several thousand feet from the production pad on the surface. Prior to initiating HF, a cement bond log and pressure test is required and evaluated to ensure the integrity of the cement and its bond to both the well casing and the geologic formation.

The total volume of fracturing fluids is generally 95-99% water. The amount of water needed to fracture a well in NV depends on the geologic basin, the formation, and depth and type of well (vertical, horizontal, directional), and the proposed completion process.

In general, approximately 50,000 to 300,000 gallons may be used to fracture shallow vertical wells in NV, while approximately 800,000 to 10 million gallons may be used to fracture deep tight sand gas horizontal or directionally drilled wells in NV.

Proppant, consisting of synthetic or natural silica sand, may be used in quantities of a few hundred tons for a vertical well to a few thousand tons for a horizontal well.

Drilling muds, drilling fluids, water, proppant, and HF fluids are stored in onsite tanks or lined pits during the drilling and/or completion process. Equipment transport and setup can take several days, and the actual HF and flowback process can occur in a few days up to a few weeks. For oil wells, the flowback fluid from the HF operations is treated in an oil-water separator before it is stored in a lined pit or tank located on the surface. Where gas wells are flowed back using a "green completion process" fluids are run through a multi-phase separator, which are then piped directly to enclosed tanks or to a production unit. Nevada currently does not have large volumes of gas production, but this may change depending on the formation.

Gas emissions associated with the HF process are captured when the operator utilizes a green completion process. Where a green completion process is not utilized, gas associated with the well may be vented and/or flared until "saleable quality" product is obtained in accordance with

federal and state rules and regulations. The total volume of emissions from the equipment used (trucks, engines) will vary based on the pressures needed to fracture the well, and the number of zones to be fractured.

Under either completion process, wastewaters from HF may be disposed in several ways. For example, the flowback fluids may be stored in tanks pending reuse; the resultant waste may be re-injected using a permitted injection well, or the waste may be hauled to a licensed facility for treatment, disposal and/or reuse.

Disposal of the waste stream following establishment of "sale-quality" product, would be handled in accordance with Onshore Order #7 regulations and other state/federal rules and regulations.

Fracturing Fluids

As indicated above, the fluid used in the HF process is approximately 95to 99 percent water and a small percentage of special-purpose chemical additives and proppant. There is a broad array of chemicals that can be used as additives in a fracture treatment including, but not limited to, hydrochloric acid, anti-bacterial agents, corrosion inhibitors, gelling agents (polymers), surfactants, and scale inhibitors. The 1 to 5 percent of chemical additives translates to a minimum of 5,000 gallons of chemicals for every 1.5 million gallons of water used to fracture a well (Paschke, Dr. Suzanne. USGS, Denver, Colorado. September 2011). Water used in the HF process is generally acquired from surface water or groundwater in the local area. Information on obtaining water and water rights is discussed below.

The Nevada Division of Minerals (NDOM) has regulations that require the reporting of the amount and type of chemicals used in a HF operation in "FracFocus" within 60 days of HF completion for public disclosure. For more information concerning FracFocus and HF, refer to the FracFocus website at www.fracfocus.org and the NDOM website at minerals.state.nv.us.

Re-Fracturing

Re-fracturing of wells (RHF) may be performed after a period of time to restore declining production rates. RHF success can be attributed to enlarging and reorienting existing fractures while restoring conductivity due to proppant degradation and fines plugging. Prior to RHF, the wellbore may be cleaned out. Cleaning out the wellbore may recover over 50% of the initial proppant sand. Once cleaned, the process of RHF is the same as the initial HF. The need for RHF cannot be predicted.

Water Availability and Consumption Estimates

According to the Nevada State Water Plan (March 1999), total statewide water withdrawals for NV are forecasted to increase about 9 percent from 4,041,000 acre-feet in 1995 to 4,391,000 acre-feet in 2020, assuming current levels of conservation. Approximately one-half of these withdrawals are consumptively used. This projected increase in water use is directly attributable to Nevada's increasing population and related increases in economic endeavors.

The anticipated rise in total statewide water withdrawals primarily reflects expected increases in public supply for M&I water usage to meet the needs of a growing urban population, with expanding commercial and industrial activities. Nevada's population is projected to reach about

3,047,000 by the year 2020, with about 95 percent of these residents served by public water systems (NDWP, March 1999).

M&I withdrawals currently account for about 13 percent of the water used in NV. Annual M&I water use is projected to increase from 525,000 af in 1995 to 1,034,000 af in 2020 (24 percent of total water withdrawals) based upon existing water use patterns and conservation measures. About 77 percent of water withdrawals are for agricultural use. Approximately 6 to 7 percent of statewide water withdrawals occur in the mining industry (NDWP, March 1999).

Interest in obtaining the necessary water supplies for wildlife and environmental needs is increasing. Additionally, the popularity of water-based outdoor recreation continues to grow. It is anticipated that these trends will continue, resulting in increased water supply demands for wildlife, environmental and recreational purposes.

Currently, surface water supplies are virtually fully appropriated. The increase in total statewide demand, particularly M&I water use, is expected to be met via better demand management (conservation), use of alternative sources (reused water, reclaimed water and greywater), purchases, leases or other transfers from existing water users, and by new groundwater appropriations. Much of the state's unappropriated groundwater is located in basins at a distance from urban centers. Thus, increasing attention will be placed on interbasin and intercounty transfers, and implementation of underutilized water management tools such as water marketing and water banking. Water for instream flow purposes, wildlife protection, environmental purposes and recreation will likely be generated by increased conservation and the acquisition of existing water rights (NDWP, March 1999).

Potential Sources of Water for Hydraulic Fracturing

Freshwater-quality water is required to drill the surface-casing section of the wellbore per Federal regulations; other sections of the wellbore (intermediate and/or production strings) would be drilled with appropriate quality makeup water as necessary. This is done to protect usable water zones from contamination, to prevent mixing of zones containing different water quality/use classifications, and to minimize total freshwater volumes. With detailed geologic well logging during drilling operations, geologists/mud loggers on location identify the bottoms of these usable water zones, which aids in the proper setting of casing depths.

Several sources of water are available for drilling and/or HF in NV. Because Nevada's water rights system is based in the prior appropriation doctrine, water cannot be diverted from a stream/reservoir or pumped out of the ground for drilling and/or HF without reconciling that diversion with the prior appropriation doctrine. Like any other water user, companies that drill or hydraulically fracture oil and gas wells must adhere to NV water laws when obtaining and using specific sources of water.

Below is a discussion of the sources of water that could potentially be used for HF. The decision to use any specific source is dependent on BLM authorization at the APD stage and the ability to satisfy the water appropriation doctrine. From an operators' standpoint, the decision regarding which water source will be used is primarily driven by the economics associated with procuring a specific water source.

Water transported from outside the state. The operator may transport water from outside the state. As long as the transport and use of the water carries no legal obligation to NV, this is an allowable source of water from a water rights perspective.

Irrigation water leased or purchased from a landowner. The landowner may have rights to surface water, delivered by a ditch or canal that is used to irrigate land. The operator may choose to enter into an agreement with the landowner to purchase or lease a portion of that water. This is allowable, however, in nearly every case; the use of an irrigation water right is likely limited to irrigation uses and cannot be used for well drilling and HF operations. To allow its use for drilling and HF, the owner of the water right and the operator must apply to change the water right through a formal process.

Treated water or raw water leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water from the water provider's system. Municipalities and other water providers may have a surplus of water in their system before it is treated (raw water) or after treatment that can be used for drilling and HF operations. Such an arrangement would be allowed only if the operator's use were compliant with the water provider's water rights.

Water treated at a waste water treatment plant leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water that has been used by the public, and then treated as wastewater. Municipalities and other water providers discharge their treated waste water into the streams where it becomes part of the public resource, ready to be appropriated once again in the priority system. But for many municipalities a portion of the water that is discharged has the character of being "reusable." As a result, it is possible that after having been discharged to the stream, it could be diverted by the operator to be used for drilling and HF operations. Such an arrangement would only be appropriate with the approval of the Nevada Department of Environmental Protection, State Engineer's Office (NDEP) and would be allowed only if the water provider's water rights include uses for drilling and HF operations.

New diversion of surface water flowing in streams and rivers. New diversion of surface waters in most parts of the state are rare because the surface streams are already "over appropriated," that is, the flows do not reliably occur in such a magnitude that all of the vested water rights on those streams can be satisfied. Therefore, the only time that an operator may be able to divert water directly from a river is during periods of high flow and less demand. These periods do occur but not reliably or predictably.

Produced Water. The operator may choose to use water produced in conjunction with oil or gas production at an existing oil or gas well. The water that is produced from an oil or gas well is under the administrative purview of the NDEP, Underground Injection Control Program (UIC) and is either non-tributary, in which case, it is administered independent of the prior appropriation doctrine; or is tributary, in which case, the depletions from its withdrawal must be fully augmented if the depletions occur in an over-appropriated basin. The result in either case is that the produced water is available for consumption for other purposes, not just oil and gas

operations. The water must not be encumbered by other needs and the operator must obtain a proper well permit from the NDEP before the water can be used for drilling and HF operations.

Reused or Recycled Drilling Water. Water that is used for drilling of one well may be recovered and reused in the construction of subsequent wells. The BLM encourages reuse and recycling of both the water used in well drilling and the water produced in conjunction with oil or gas production. However, as described above, the operator must obtain the right to use the water for this purpose.

On-Location Water Supply Wells. Operators may apply for, and receive, permission from the NDEP to drill and use a new water supply well. These wells are usually drilled on location to provide an on-demand supply. These industrial-type water supply wells are typically drilled deeper than nearby domestic and/or stock wells to minimize drawdown interference, and have large capacity pumps. The proper construction, operation and maintenance, backflow prevention and security of these water supply wells are critical considerations at the time they are proposed to minimize impacts to the well and/or the waters in the well and are under the jurisdiction of the NDEP. Plugging these wells is under the jurisdiction of the NDEP and BLM.

III. Potential Impacts to Usable Water Zones

Impacts to freshwater supplies can originate from point sources, such as chemical spills, chemical storage tanks (aboveground and underground), industrial sites, landfills, household septic tanks, and mining activities. Impacts to usable waters may also occur through a variety of oil and gas operational sources which may include, but are not limited to, pipeline and well casing failure, and well (gas, oil and/or water) drilling and construction of related facilities. Similarly, improper construction and management of open fluids pits and production facilities could degrade ground water quality through leakage and leaching.

Should hydrocarbons or associated chemicals for oil and gas development, including HF, exceeding US Environmental Protection Agency (EPA)/NDEP standards for minimum concentration levels migrate into potable water supply wells, springs, or usable water systems, it could result in these water sources becoming non-potable. Water wells developed for oil and gas drilling could also result in a draw down in the quantity of water in nearby residential areas depending upon the geology; however it is not currently possible to predict whether or not such water wells would be developed.

Usable groundwater aquifers are most susceptible to pollution where the aquifer is shallow (within 100 feet of the surface depending on surface geology) or perched, are very permeable, or connected directly to a surface water system, such as through floodplains and/or alluvial valleys or where operations occur in geologic zones which are highly fractured and/or lack a sealing formation between the production zone and the usable water zones. If an impact to usable waters were to occur, a greater number of people could be affected in densely populated areas versus sparsely populated areas characteristic of NV.

Potential impacts on usable groundwater resources from fluid mineral extraction activities can result from the five following scenarios:

1. Contamination of aquifers through the introduction of drilling and/or completion fluids through spills or drilling problems such as lost circulation zones.

2. Communication of the induced hydraulic fractures with existing fractures potentially allows for HF fluid migration into usable water zones/supplies. The potential for this impact is likely dependent on the local hydraulic gradients where those fluids are dissolved in the water column.

3. Cross-contamination of aquifers/formations may result when fluids from a deeper aquifer/formation migrate into a shallower aquifer/formation due to improperly cemented well casings.

4. Localized depletion of perched aquifer or drawdown of unconfined groundwater aquifer.

5. Progressive contamination of deep confined, shallow confined, and unconfined aquifers if the deep confined aquifers are not completely cased off, and geologically isolated, from deeper oil bearing units. An example of this would be salt water intrusion resulting from sustained drawdown associated with the pumping of groundwater.

The impacts above could occur as a result of the following processes:

Improper casing and cementing.
A well casing design that is not set at the proper depths or a cementing program that does not properly isolate necessary formations could allow oil, gas or HF fluids to contaminate other aquifers/formations.

Natural fractures, faults, and abandoned wells.
If HF of oil and gas wells result in new fractures connecting with established natural fractures, faults, or improperly plugged dry or abandoned wells, a pathway for gas or contaminants to migrate underground may be created posing a risk to water quality. The potential for this impact is currently unknown but it is generally accepted that the potential decreases with increasing distance between the production zone and usable water zones. This potential again is dependent upon the site specific conditions at the well location.

Fracture growth.
A number of studies and publications report that the risk of induced fractures extending out of the target formation into an aquifer—allowing hydrocarbons or other fluids to contaminate the aquifer —may depend, in part, on the formation thickness separating the targeted fractured formation and the aquifer. For example, according to a 2012 Bipartisan Policy Center report, the fracturing process itself is unlikely to directly affect freshwater aquifers because fracturing typically takes place at a depth of 6,000 to 10,000 feet, while drinking water aquifers are typically less than 1,000 feet deep. Fractures created during HF have not been shown to span the distance between the targeted oil formation and freshwater bearing zones. If a parcel is sold and development is proposed in usable water zones, those operations would have to comply with federal and/or state water quality standards or receive a Class II designation from the NDEP.

Fracture growth and the potential for upward fluid migration, through volcanic, sedimentary and other geologic formations depend on site-specific factors such as the following:

1. Physical properties, types, thicknesses, and depths of the targeted formation as well as those of the overlying geologic formations.

2. Presence of existing natural fracture systems and their orientation in the target formation and surrounding formations.

3. Amount and distribution of stress (i.e., in-situ stress), and the stress contrasts between the targeted formation and the surrounding formations.

Hydraulic fracture stimulation designs include the volume of fracturing fluid injected into the formation as well as the fluid injection rate and fluid viscosity; this information would be evaluated against the above site specific considerations.

Fluid leak and recovery (flowback) of HF fluids.

Not all fracturing fluids injected into the formation during the HF process may be recovered at the surface. Fluid movement into smaller fractures or other geologic substructures can be to a point where flowback efforts will not recover all the fluid or that the pressure reduction caused by pumping during subsequent production operations may not be sufficient to recover all the fluid that has leaked into the formation. It is noted that the fluid loss due to leakage into small fractures and pores is minimized by the use of cross-linked gels.

Willberg et al. (1998) analyzed HF flowback and described the effect of pumping rates on cleanup efficiency in initially dry, very low permeability (0.001 millidarcy) shale. Some wells in this study were pumped at low flowback rates (less than 3 barrels per minute (bbl/min). Other wells were pumped more aggressively at greater than 3 bbl/min. Thirty-one percent of the injected HF fluids were recovered when low flowback rates were applied over a 5-day period. Forty-six percent of the fluids were recovered when aggressive flowback rates were applied in other wells over a 2-day period. In both cases, additional fluid recovery (10 percent to 13 percent) was achieved during the subsequent gas production phase, resulting in a total recovery rate of 41 percent to 59 percent of the initial volume of injected HF fluid. Ultimate recovery rate however, is dependent on the permeability of the rocks, fracture configuration, and the surface area of the fracture(s).

The ability of HF chemicals to migrate in an undissolved or dissolved phase into a usable water zone is likely dependent upon the location of the sealing formation (if any), the geology of the sealing formation, hydraulic gradients and production pressures.

HF fluids can remain in the subsurface unrecovered, due to “leak off” into connected fractures and the pores of rocks. Fracturing fluids injected into the primary hydraulically induced fracture can intersect and flow (leak off) into preexisting smaller natural fractures. Some of the fluids lost in this way may occur very close to the well bore after traveling minimal distances in the hydraulically induced fracture before being diverted into other fractures and pores. Once “mixed” with the native water, local and regional vertical and horizontal gradients may influence

where and if these fluids will come in contact with usable water zones, assuming that there is inadequate recovery either through the initial flowback or over the productive life of the well. Faults, folds, joints, etc., could also alter localized flow patterns as discussed below.

The following processes can influence effective recovery of the fracture fluids:

Check-Valve Effect
A check-valve effect occurs when natural and/or newly created fractures open and HF fluid is forced into the fractures when fracturing pressures are high, but the fluids are subsequently prevented from flowing back toward the wellbore as the fractures close when the fracturing pressure is decreased (Warpinski et al., 1988; Palmer et al., 1991a).

A long fracture can be pinched-off at some distance from the wellbore. This reduces the effective fracture length. HF fluids trapped beyond the "pinch point" are unlikely to be recovered during flowback and oil/gas is unlikely to be recovered during production.

In most cases, when the fracturing pressure is reduced, the fracture closes in response to natural subsurface compressive stresses. Because the primary purpose of HF is to increase the effective permeability of the target formation and connect new or widened fractures to the wellbore, a closed fracture is of little use. Therefore, a component of HF is to "prop" the fracture open, so that the enhanced permeability from the pressure-induced fracturing persists even after fracturing pressure is terminated. To this end, operators use a system of fluids and "proppants" to create and preserve a high-permeability fracture-channel from the wellbore deep into the formation.

The check-valve effect takes place in locations beyond the zone where proppants have been placed (or in smaller secondary fractures that have not received any proppant). It is possible that some volume of stimulation fluid cannot be recovered due to its movement into zones that were not completely "propped" open.

Adsorption and Chemical Reactions
Adsorption and chemical reactions can also prevent HF fluids from being recovered. Adsorption is the process by which fluid constituents adhere to a solid surface and are thereby unavailable to flow with groundwater. Adsorption to coal is likely; however, adsorption to other geologic material (e.g., shale, sandstone) is likely to be minimal. Another possible reaction affecting the recovery of fracturing fluid constituents is the neutralization of acids (in the fracturing fluids) by carbonates in the subsurface.

Movement of Fluids outside the Capture Zone
Fracturing fluids injected into the target zone flow into fractures under very high pressure. The hydraulic gradients driving fluid flow away from the wellbore during injection are much greater than the hydraulic gradients pulling fluid flow back toward the wellbore during flowback and production (pumping) of the well. Some portion of the fracturing fluids could be forced along the hydraulically induced fracture to a point beyond the capture zone of the production well. The size of the capture zone will be affected by the regional groundwater gradients, and by the drawdown caused by producing the well. Site-specific geologic, hydrogeologic, injection pressure, and production pumping details should provide the information needed to estimate the

dimension of the production well capture zone and the extent to which the fracturing fluids might disperse and dilute.

Incomplete Mixing of Fracturing Fluids with Water

Steidl (1993) documented the occurrence of a gelling agent that did not dissolve completely and actually formed clumps at 15 times the injected concentration in an induced fracture. Steidl also directly observed gel hanging in stringy clumps in many other induced fractures. As Willberg et al. (1997) noted, laboratory studies indicate that fingered flow of water past residual gel may impede fluid recovery. Therefore, some fracturing fluid gels appear not to flow with groundwater during production pumping and remain in the subsurface unrecovered. Such gels are unlikely to flow with groundwater during production, but may present a source of gel constituents to flowing groundwater during and after production.

Authorization of any future proposed projects would require full compliance with local, state, and federal regulations and laws that relate to surface and groundwater protection and would be subject to routine inspections by the BLM and the State of Nevada Commission on Mineral Resources, Division of Minerals Memorandum of Understanding dated January 9, 2006, prior to approval.

IV. Geologic Hazards (including seismic/landslides)

Nevada is the 3rd most tectonically active state in the union. Since the 1850s there have been 63 earthquakes with a magnitude greater than 5.5, the cutoff for a destructive earthquake. Potential geologic hazards caused by HF include induced seismic activity in addition to the tectonic activity already occurring in the state. Induced seismic activity could indirectly cause a surficial landslide where soils/slopes are susceptible to failure. Landslides involve the mass movement of earth materials down slopes and can include debris flows, soil creep, and slumping of large blocks of material. Any destructive earthquake also has the potential to induce liquefaction in saturated soils.

Earthquakes occur when energy is released due to blocks of the earth's crust moving along areas of weakness or faults. Earthquakes attributable to human activities are called "induced seismic events" or "induced earthquakes." In the past several years induced seismic events related to energy development projects have drawn heightened public attention. Although only a very small fraction of injection and extraction activities at hundreds of thousands of energy development sites in the United States have induced seismicity at levels that are noticeable to the public, seismic events caused by or likely related to energy development have been measured and felt in Alabama, Arkansas, California, Colorado, Illinois, Louisiana, Mississippi, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, and Texas.

A study conducted by the National Academy of Sciences (Induced Seismicity Potential in Energy Technologies, National Academy of Sciences, 2012) studied the issue of induced seismic activity from energy development. As a result of the study, they found that:

1. The process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events; and

2. Injection for disposal of waste water derived from energy technologies into the subsurface does pose some risk for induced seismicity, but very few events have been documented over the past several decades relative to the large number of disposal wells in operation.

The potential for induced seismicity cannot be made at the leasing stage; as such, it will be evaluated at the APD stage should the parcel be sold/issued, and a development proposal submitted.

V. Spill Response and Reporting

Spill Prevention, Control, and Countermeasure (SPCC) Plans – EPA's rules include requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires that operators of specific facilities prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan (FRP) rule. Originally published in 1973 under the authority of §311 of the Clean Water Act, the Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires the operator of these facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements (Subparts A, B, and C). In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to prepare FRPs. On July 1, 1994, EPA finalized the revisions that direct facility owners or operators to prepare and submit plans for responding to a worst-case discharge of oil.

In addition to EPA's requirements, operators must provide a plan for managing waste materials, and for the safe containment of hazardous materials, per Onshore Order #1 with their APD proposal. All spills and/or undesirable events are managed in accordance with Notice to Lessee (NTL) 3-A for responding to all spills and/or undesirable events related to HF operations.

Certain oil and gas exploration and production wastes occurring at or near wellheads are exempt from the Clean Water Act, such as: drilling fluids, produced water, drill cuttings, well completion, and treatment and stimulations fluids. In general, the exempt status of exploration and production waste depends on how the material was used or generated as waste, not necessarily whether the material is hazardous or toxic.

VI. Public Health and Safety

The intensity, and likelihood, of potential impacts to public health and safety, and to the quality of usable water aquifers is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments. The potential impacts are also dependent on the extent of the production well's capture zone and well integrity. Nevada's Standard Lease Stipulations and Lease Notices specify that oil and gas

development is generally restricted within 500 feet of riparian habitats and wetlands, perennial water sources (rivers, springs, water wells, etc.) and/or floodplains. Intensity of impact is likely dependent on the density of development.

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